Antiquity

VOL. XXII No. 88 DECEMBER 1948

Editorial Notes

WE extend a hearty welcome to 'Sumer'*—a welcome none the less hearty because through no fault of ours it is somewhat belated. So far as we are aware, this is the first archaeological journal to be published by any of the succession states in the Middle East. May it be followed by many others.

Each number contains illustrated articles in English and in Arabic, the latter covering many more pages than the former. We do not propose to list or review the articles themselves, much less to score a few cheap points by drawing attention to the far too numerous misprints and other defects that are perhaps inevitable at the outset in a pioneer publication such as this. We prefer to look on the bright side and to select those features which, as it seems to us, promise well for the future. For we can see evidence of vitality and of an awakening interest that may mark the beginning of a new era in oriental research. Hitherto some of that research has been carried out by Iraqis working under the direction of Europeans, who have themselves published the results. With the achievement of independence (albeit limited by treaty obligations) the whole responsibility for research and the conservation of the national antiquities falls upon the shoulders of the Iraq government. Those who own their house and garden usually devote more care to its upkeep than those who merely rent them from others. That the Director-General of Antiquities, Dr Naji al-Asil, takes a wide and philosophic view of what is meant by archaeology is evident from his remarks on p. 41 of no. 1. To be able to see the history of a single country against the background of the whole history of man is a rare gift not possessed by many men of learning and scholarship; though such a view must come more easily to one who lives in the land where so many of man's earliest and most important inventions—such as agriculture, urban life, writing, for instance—were made. There are other signs of that universal outlook which (as we pointed out in a book written many years ago) marks the true archaeologist. On pp. 39–40 of no. 1 is a letter from Dr van Riet Lowe thanking the Director-General for information about Iraqi beads, required for comparison with the beads—all-important for dating purposes—

* Sumer: a journal of archaeology in Iraq; published by the Directorate-General of Antiquities, Baghdad, Iraq. Vol. III, no. 1 (January), no. 2 (July), 1947. Review copies of the earlier volumes were not sent, and when (quite by accident) the Editor discovered the existence of this journal and asked for review-copies, the earlier issues were already out of print.

found at Zimbabwe in Rhodesia. There is also a discussion of the Chinese celadon-ware found in both areas. In this little exchange all the three basic divisions of mankind are involved—the Negro (at Zimbabwe), the Caucasian and the Mongolian; and medieval European culture also plays a part in the Venetian origin of some of the beads. Thus do some of the humblest (but most useful) of archaeological finds bind together three continents. Could there be a more telling instance of the need for the world-wide cooperation of archaeologists, or a better example of such actually in operation today? And if someone should remind one of a fourth and very important continent, he may be referred to Dr Goetze's letter (from Yale) on p. 36.

We are fully aware that what we have just written may well be misunderstood, and perhaps laughed at, by some, in whose eyes technical shortcomings loom large. They may compare 'Sumer' with 'Iraq' or 'Ancient India' or the Journal of the Egyptological Society. Such a comparison would be as unfair as one between the technical achievements of the U.S.S.R. today and those of, say, the U.S.A. The only legitimate comparison is between the U.S.S.R. today and Russia before 1917, and between 'Sumer' and other similar publications printed and published in Iraq. Having thus cleared the ground we hope we shall not be misunderstood if we emphasize the outstanding importance of the technical side of archaeology. It is hardly an exaggeration to say that archaeology *is* a technique. It reveals the past by bringing to bear upon any given ancient site or problem the whole armoury of modern inventions—excavation, conservation, linguistics, survey, photography, the analysis of soil and pollen, dendrochronology and many others. Above all archaeology is concerned with the soil and its interpretation, chiefly by means of stratification and the drawing of sections. We are all dirt-archaeologists to day, and proud of it. The chief task of archaeologists in countries like Iraq should be to acquire the new techniques now available; and the chief duty of Europeans there should be to assist in teaching them. That both these things are being done already is evident from the contents of these two numbers of 'Sumer', which contain air-photographs, plans, and sectional drawings of pottery. Incidentally it is to be observed that 'Sumer' is the first journal to publish an air-photograph of the area where air-photography itself was born in the first world-war (no. 2, Samarra).

We will end by making some suggestions for future work in Iraq. We have made some of them before, but the present is perhaps a more favourable occasion. We make them simply because we know the work wants doing; it is work we should like to have done ourselves if we had and the means and ability to do it.

First and foremost, there should be formed a collection of air-photographs of Iraq as a whole—at any rate of the riverain parts—and of individual sites. From this there could be compiled and published a series of albums, illustrating the history of Iraq from the earliest times down at any rate to the Mongol invasion. From the air-photographs the ancient irrigation-system and its accompanying towns could be plotted on maps, and a series of period-maps on a scale of 1 : 1,000,000 published. (The base-maps already exist in the International series). The larger and more ambitious

publications could then be boiled down into a guide-book or series of guide-books of the country. (Felix Jones's description is still in many ways the best but is now over a century old and rather out of date !). In excavation we would suggest, as one of many promising lines, the digging of careful sections of the natural soil *near* the chief ancient sites. No one, for instance, has ever dug a deep trench through any of the derelict canals ; owing to the accumulation of silt they must be ideal subjects for the study of stratification. They might also yield intrinsically valuable finds accidentally dropped in the water, especially near such towns as Ur, where there is a fine buried canal. In general, in Lower Mesopotamia the relation between marine and freshwater deposits on the one hand and archaeological periods on the other needs to be established. Woolley's pioneer work in this field needs to be followed up and developed. Such excavation is of course controlled by the water-level, and there may be regions where it would be impossible ; but there must also be many others where it could be carried out. Flying between Baghdad and Mosul one sees ancient abandoned cities thickly studded along the banks of the chief irrigation canal.

This is of course a programme of years. It is one which will not yield showy finds but it will, if carried out, yield an abundant harvest of new knowledge. In matters of time a country whose civilization is already more than five millennia old need not be afraid to look far ahead also. The need is pressing, for we do not know how long it will be before a regenerated irrigation-system and its associated cultivation will close the doors effectively to all such work.

Subscribers will notice that the publication address of ANTIQUITY has been changed. That is because one of the Editors, Roland Austin, has been obliged to retire for reasons of health. ANTIQUITY owes to Roland Austin more than it is possible to express in words. It owes to him its very name, which he suggested: and over 20 years of unremitting work and scholarly editing. We know that there will be many readers of ANTIQUITY to whom Roland Austin's retirement will bring a feeling of personal loss.

All business communications (including SUBSCRIPTIONS) should in future be addressed to the publisher of ANTIQUITY (H. W. Edwards), The Wharf, Newbury, Berks., England. The early payment of subscriptions for 1949 will be greatly appreciated by him. A form is enclosed for that purpose (except to those who already use that method). Might we ask others also to consider payment by Banker's Order, which saves all concerned much unnecessary correspondence ? We repeat again below the address for subscriptions

ANTIQUITY, The Wharf, Newbury, Berks., England.

The Early Plan and Town Houses of Silchester

(*Calleva Atrebatum*)

by Aileen Fox

THE 1938–9 excavations at *Calleva*, of which Mrs Aylwin Cotton's report has recently appeared (1), show how much more can be learnt about a Romano-British town when modern scientific excavation technique is used to supplement the efforts of earlier antiquaries. George Fox, St. John Hope and Mill Stephenson (to whom all honour) achieved the complete plan, labouring from 1890–1908 each year for months at a time at the total excavation of the hundred acres within the city walls. Now Mrs Cotton by selective excavation and a study of stratigraphy has built up the outline chronology so urgently required : thus we have now both a Map and a Time-Chart for this city. Mrs Cotton's report shows that the original Roman city extended up to the outer earthwork, hitherto thought to be of pre-Roman construction, covering an area of some 230 acres (2), and that the walls with a slightly earlier bank behind them are a contraction of the latter half of the 2nd century A.D. (3) The evidence was clear ; the metal of the streets and layers of dark occupation soil of Hadrian-Antonine date continued under the bank (4), and the streets continued on the same alignment in the space between the wall and outer earthwork (5). Of the street plan Mrs Cotton observes (6) *inter alia* that the chessboard ' is singularly rectangular ' and that ' it did not exist, at any rate in its later form when the Bath Building in Insula XXXIII was built about the reign of Nero '. It was these two comments and their footnotes that sent me searching the shelf with *Archaeologia* ranged heavily along it, and that prompted this article.

First the Bath Building, which was the largest found and must be the Public Baths. This was excavated towards the end of the Society of Antiquaries' campaign in 1903–4, and six stages for the elaborate plan were methodically worked out (7). From the first the Baths were on a major scale, with a portico and *palaestra* fronting the usual range of rooms arranged in a transverse row (*Reihentypus*) (8). The portico in particular was of a monumental character, with 8 Doric columns with a double roll moulding at the base and a pronounced necking (*toros*) below the cap (9), a type that can be matched on other Romano-British city sites like Cirencester or Wroxeter. The stone has been kindly identified for me by Dr Wallis (10) as an Oolite, of the type known as Bath Oolite : he adds that this rock was extensively used in the Roman buildings at Bath ; and is found

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[1] *Archaeologia* 92 (1947), p. 121 ff.

[2] It may be compared to *Corinium* (Cirencester) 240 acres.

[3] The Bank is dated to *c.* A.D. 160–170 (p. 129), and the Wall to the close of the 2nd century, probably to Severus, A.D. 193–217, loc. cit., p. 132.

[4] ibid, fig. 1 and pl. XXXI. [5] ibid, fig. 5. [6] ibid, p. 135.

[7] *Archaeologia* 59.2, p. 341, pl. LXXIV. The site was chosen for its water supply.

[8] See D. Atkinson, *Wroxeter*, 1923–7, p. 333, Appendix B, for a discussion of its origin.

[9] *Archaeologia* 59.2, p. 342, fig. 3, a and b.

[10] I am indebted to Mr Smallcombe of the Reading Museum for allowing me to have the material identified by Dr Wallis of Bristol. Mr Melville of the Geological Survey has identified other Oolites used in the city wall of Silchester, *Arch.* 92, p. 143.

at Corsham and Box nearby. The Silchester columns are evidence for the opening up of the Bath quarries on a considerable scale at an early date.

Even allowing for the wooden architrave, the 65 feet façade must have been imposing; yet this portico was ruthlessly destroyed, the columns hacked down and their stumps buried in 18 inches of gravel, and a plain front with protruding latrine block built in its place (**11**). This alteration, as both the earlier excavators and Mrs Cotton observed, was necessary to make the front of the Baths line with the new ' chessboard ' street plan, which centering on the Forum, was now being laid out in *Calleva*. It involved an alteration of some 9 degrees of arc.

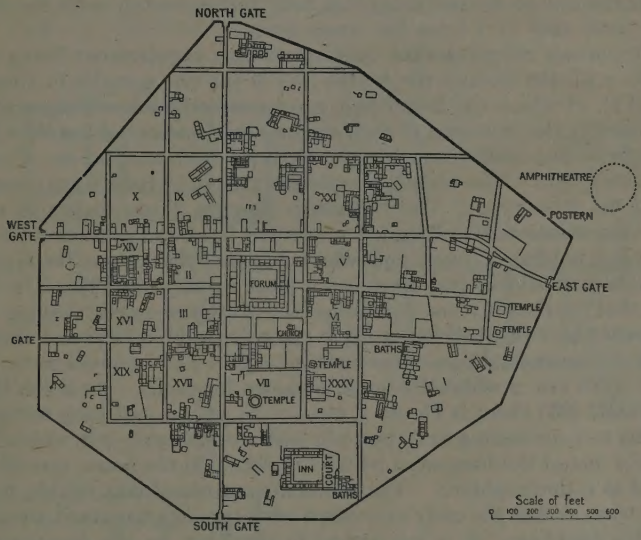

FIG. 1. SILCHESTER: THE TOWN PLAN
Reproduced by permission of the Clarendon Press, Oxford

Turning now to this chessboard (**12**) (FIG. 1), in the eastern quarter of the town it is really not so regular as it appears at a quick glance, and has certain curious anomalies. The Forum and Basilica block is not strictly central to nor set absolutely square in the double *insula* it occupies, and as a result some curious small plots are produced on its margins. The wide road leading to its main entrance from the east is plainly out of alignment with the street grid on the west side of the Forum block: indeed as it traverses Insulae V and VI it is running parallel to the Baths alignment. Moreover the early excavators noticed that the massive concrete foundations for the main entrance to the Forum (**13**) itself were not centrally placed and I suggest that it was the need to compromise and adjust to an earlier street plan that tugged them out of their proper place. Another street, this time running NS in the eastern quarter of the city, is totally out of alignment, either with the ' chessboard ' or the Baths, and may perhaps indicate the type

[11] *Archaeologia* 59.2, p. 346 and fig. 2.
[12] The final large-scale plan is in *Archaeologia* 61.2, pl. LXXXV.
[13] *Archaeologia* 53.2, p. 543.

of irregularity that made the Atrebates determine to make a fresh start. The change of angle in the roads (**14**) leading to the east gate is now explained by Mrs Cotton's work, the gate being built after the streets were laid out.

Are there any other traces of the early lay-out ? Haverfield once likened *Calleva* to a garden city, and gave it as an example of free-style Celtic development (**15**) as opposed to the Roman rigid schemes designed for the densely populated cities of the Mediterranean, and of course many of the smaller houses on the spacious periphery of *Calleva* appear quite haphazard in their siting. Excavations too at *Verulamium* have shown that contemporary buildings often disregard the niceties of the street alignment (**16**). We must therefore look for buildings that tally approximately with the Baths alignment, not merely those that vary from the street grid.

Two important religious sites conform to this requirement being set at angles of 9–10 degrees with the street ; the first is that of the two temples in Insula xxx near the East Gate (**17**), of which the larger and more northerly showed signs of being rebuilt : it was presumably the existence of their *temenos* that prevented the later East Gate being placed in a direct line with entrance to the Forum : both temples are of the Gallo-Roman (double square) plan. The second temple site (**18**) is in Insula xxxv, and was a smaller structure of the same type. The excavators thought it was dedicated to Mars because fragments of a statue which included a bearded head and greaves were found. There was also a hand holding a cornucopia which suggests that the native aspect of Mars as a god of fertility and healing may have had a place in the cult (**19**). The important thing to notice is that in effect it turns its back on the nearby N–S street, having an external altar and its entrance by a flight of low steps to the colonnade, on the east side.

Next there are several houses conforming within a few degrees to the Baths 9 degrees alignment. (See FIG. 2 where the angle is shown for each). Near the Baths themselves in Insula xxxiii (**20**) there is House 4 (FIG. 2, 1) an unusual long rectangular structure lying roughly N–S, measuring 61 ft. by 17 ft. with a verandah 6–7 ft. wide all round it. The entrance is in one of the long sides which suggests that the house was sited with its main axis parallel to a thoroughfare. The foundations were of flint rubble and tile, and were only 1 foot wide, and as the early excavators very sensibly remarked, they must have been for a wooden building. It is interesting to speculate on the construction. I suggest it was a timber-framed house with sill beams laid on the sleeper wall foundations. The uprights would be tenoned in and the interspaces filled with wattle and daub, or clap-boarded. The verandahs would be colonnaded, probably with a low wall between the posts. The roofing of the central portion (17 feet wide), presents no difficulty whether with tile or thatch, but presumably would need some clerestory lighting : the verandahs would have lean-to roofs at a lower pitch. Unfortunately there is no evidence to determine whether this house was a great open hall house, or divided into rooms ; post holes were not recognized at this time. This large house must have been one of the earliest in *Calleva* because it was both altered on the south, by widening the verandah thereby

[14] The northern line is the later course ; in one of the two rectangular buildings built across the southern line a coin hoard of mid 4th century date was found. *Arch.* 61.2, p. 477–9.

[15] *Ancient Town Planning*.

[16] e.g. R. E. M. Wheeler, *Verulamium*, Insula IV, pl. XXXI.

[17] *Arch.* 52.2, pl. XXX, p. 745 ff. Coins of the 3rd and 4th century are recorded from the site.

[18] *Arch.* 61.1, p. 206, pl. XXIII.

[19] P. Lambrecht, *Contributions á l'étude des divinités Celtiques*, p. 145 ff. *Modens*, at Lydney, is another example : see Wheeler, *Lydney Excavation Report*, p. 101.

[20] *Arch.* 59.2, pl. LXXIII and p. 338.

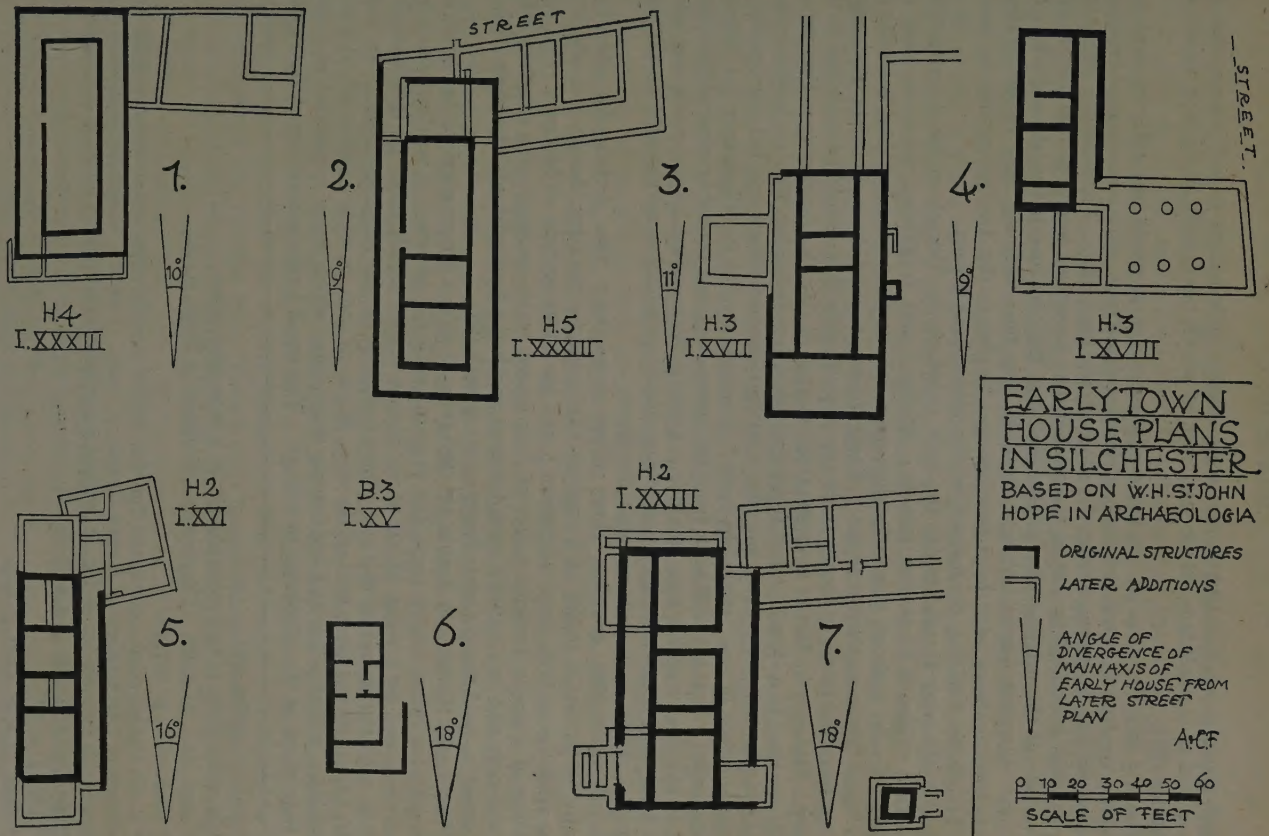
STREET
1.
10°
H.4
I. XXXIII
2.
9°
H.5
I. XXXIII
3.
11°
H.3
I. XVII
4.
STREET
20°
H.3
I. XVIII
EARLYTOWN
HOUSE PLANS
IN SILCHESTER
BASED ON W.H. ST JOHN
HOPE IN ARCHAEOLOGIA
ORIGINAL STRUCTURES
LATER ADDITIONS
ANGLE OF
DIVERGENCE OF
MAIN AXIS OF
EARLY HOUSE FROM
LATER STREET
PLAN
A.C.F
0 10 20 30 40 50 60
SCALE OF FEET
H.2
I. XVI
5.
16°
B.3
I. XV
6.
18°
H.2
I. XXIII
7.
18°

FIG. 2

making it into a room, and had an east wing added to it before it was superseded by House 5 and an outbuilding, Block VIII, both of which have their walls laid across its foundations (21).

House 5 (FIG. 2, 2) is on the same alignment (10 degrees) but with its long axis lying E–W ; apparently it was originally a closely related type, with a continuous verandah on three sides and an entrance from the south on the long side. The interior, measuring 72½ by 20½ feet is divided into three rooms, but may have been longer as it is not possible to be certain of the original plan of the west end (22) because it was altered when the house was extended northwards and brought into line with the new street frontage. There is thus evidence of at least four changes in plan in the two properties in Insula XXXIII before the building conformed to the chessboard layout.

In the adjoining Insula XXXV to the west, in which the Temple of Mars stood, there was further evidence of timber houses : Blocks I and II (23) are no more than red tessellated floors, both on the early alignment, which must have had post holes for the timber house frame on their margins. Further west, beyond the main street that crosses the town from the north to south, there are other houses that should be included in this category ; House 3 in Insula XVII (24) (FIG. 2, 3) is of double corridor type that we can now understand as a development from the preceding examples (25). The thinness of its walls (15 inches) once more suggests a timber superstructure and led the excavators to comment that it was ' probably early ', a comment that its alignment (11 degrees) fully endorses. It is set well back from the streets and was probably entered by a small porch in the centre of the east corridor. Later a thick walled heated room was added at the back, and there were incomplete remains of an addition northwards on the main axis with a return eastwards towards the street.

Insula XVIII (26) contains three more examples : two rectangular structures 58 ft. by 30 ft. set at angles of 8 degrees that underlie the later Houses 1–2 which are square with the correct street alignment ; and the older portion of House 3 (FIG. 2, 4), consisting of a single corridor house of four rooms set at an angle of 9 degrees, which later was extended as a miller's establishment and had a forecourt added square with the main street to hold the concrete bases of six querns (27).

West again House 2 in Insula XVI (28) (FIG. 2, 5) is a larger corridor house of four rooms set at a rather wider angle (16 degrees) with the streets ; it was extended by a heated room and by a wing added at an obtuse angle, which more or less brought it into line with the layout of the other later buildings in the neighbourhood. In Insula XV (29) adjoining the west wall of the city, Block III (FIG. 2, 6) is another set of narrow foundations, 1 foot thick and containing much tile, which were unearthed at a lower level than those of the adjoining buildings. The small house measuring 49 ft. by 20 ft.

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[21] ibid, pl. LXXIII, and p. 340.

[22] It seems likely to be a room like House 4 in its later phase.

[23] *Arch.* 61.1, pl. XXIII. They were so identified by Hope, p. 204.

[24] *Arch.* 56.1, p. 107, pl. V.

[25] R. G. Collingwood commented that this double corridor type was commoner at Silchester than elsewhere (*Archaeology of Roman Britain*, p. 110). I cannot accept his suggestion that it developed from the strip-house (loc.cit., p. 109), since there is no evidence for entry at the gable end.

[26] *Arch.* 56.1, pl. VII, p. 110

[27] ibid, p. 112 ff.

[28] *Arch.* 55.2, pl. XXIII, p. 419.

[29] ibid, p. 412.

would appear to be of corridor type and it was cut into when a later building, Block II, was built on the street front.

Finally, up in the northern quarter of the town the oldest part of one of the two large houses in Insula XXIII is on the same alignment (18 degrees). House 2 forms three sides of a square (30); the west wing (FIG. 2, 7) was shown to be the original dwelling consisting of a double corridor house of 4–5 rooms: later it had a heated and other rooms added to it, and then the north wing was built up against it making an obtuse angled straight joint with the older house block. The east wing (not shown in FIG. 2, 7) was of the same build with yet later alterations to bring it into line with the street. A little to the south of this house was a small shrine ('Block II') which was of two periods (31): in the earlier it was a small square building in the same alignment (18 degrees) as the original house, with a red tessellated floor; later it was rebuilt on the new alignment to correspond to the additions, and was approached from the east by a flight of steps. A coin of Marcus Aurelius was found on the lower floor and shows that the reconstruction probably took place at the end of the 2nd century, a useful chronological point.

It will be seen that in nearly every case there is evidence other than that of the alignment for an early date for the structures just described, and that they are sufficiently widespread in the city to suggest that the early irregular street plan was general in *Calleva*.

Now what about date? Mrs Cotton has shown that what I should like to call the New Town Plan must be older than the City Bank of A.D. 160–170, and later than a hut which had a coin of Domitian and late 1st-early 2nd century pottery in its floor (32), i.e. probably of the reign of Trajan; that puts the Old Town Plan back to the 1st century, taking with it (33) the temples, the corridor houses and the timber buildings. This need not surprise us for since excavation of the temple in Insula XVI at Verulamium has shown that it was built in the late 1st century (34) it is no longer necessary to believe that sanctuaries of the Gallo-Roman type were erected exclusively in the late 3rd and 4th centuries. Similarly excavations of the Roman villa at Lockley's farm, Welwyn (35) have proved that the single corridor house was built being in the country in early Flavian times. The Silchester verandahed type and its development the double corridor house, I have endeavoured to show is equally early; in fact I suspect that it owes something to the native Belgic tradition as exemplified by the long timber building dated A.D. 49–61 found at *Camulodunum* (36), and that House 4 in Insula 33 is of pre-Flavian date.

It should not be long now before a sequence of dated Roman house types is established for Britain, in which not only the ground plans but the types of construction in both wood and stone are considered as criteria. It may then be possible to assess the contribution of the native regional building styles as well as of the techniques introduced by the advanced Mediterranean civilization in the initial phase of development. In such a series the Silchester 1st century houses will find their place. It should be noted that at Silchester the familiar open fronted strip houses (shops) and the quadrangular houses (including the Hospitium) conform to the later street grid and may therefore be

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[30] *Arch.* 57.2, pl. XXX, p. 232.

[31] ibid, p. 234.

[32] *Arch.* 92, p. 135–7.

[33] Possibly the Forum too; Dr Richmond has drawn attention to a fragment of a bronze lappet from an Imperial statue of 1st century type found in the Basilica. *Antiq. Journ.*, 1944, p. 7.

[34] Lowther, *Antiq. Journ.*, 1937, p. 28.

[35] Ward Perkins, *Antiq. Journ.*, 1938, p. 339.

[36] Hawkes and Hull, *Camulodunum*. Site A.1, fig. 19, p. 89.

assumed to be of 2nd century or later date like the majority of their counterparts at Wroxeter (37) or Verulamium (38).

More excavation is clearly needed to test such hypotheses and to fix securely a closer date for the early Roman layout and growth of *Calleva*. The discovery of a floor or bonding tile with a circular stamp of Nero in a cess-pit of the Public Bath's latrine (39) points to an early period of building activities but cannot be said to prove stratigraphically that the Baths were built under this Emperor. It is unfortunate because we so badly need to know when such monumental building started and how soon there were groups of skilled masons working at the native capitals in Britain (40).

What are the probabilities ? Mrs Cotton's work on the northern periphery of the city (41), where the early occupation was scanty, revealed two phases, the first dated *c.* A.D. 45–65, and the second *c.* A.D. 65–100 : in both timber buildings without foundations, apparently little more than huts, were in use. Obviously these cannot provide the evidence to equate either phase with the more ambitious developments in the town centre, although a useful pointer. Turning to other sites, the excavation of the unfinished Public Baths beneath the later Forum at Wroxeter (42) has shown that in the north there was a phase of grandiose urban development in the 90's. In the south it would seem to have come earlier ; at Exeter (*Isca Dumnoniorum*) a timber town dating from A.D. 50–55 was laid out on new lines, public buildings in stone begun and the city embanked *circa* A.D. 80 (43), whilst the defences of the first *Verulamium* (The Fosse) (44) were erected sometime in the decade after the Boudiccan rebellion. Let me end with the earnest hope that Mrs Cotton will one day obtain the evidence (45) to place *Calleva* in this series and thus fill a gap in our knowledge of the development of urban life in Roman Britain.

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[37] J. P. Bushe-Fox, *Wroxeter*, 1912, fig. 8. Sites I–IV, early 2nd century.

[38] For example the courtyard House III.2 which superseded three late 1st century timber-framed buildings in the mid 2nd century. Wheeler, *Verulamium*, p. 94, pls. XXVIII–IX.

[39] *Archaeologia* 59.2, p. 366, fig. 13. See also *Ephemeris Epigraphica* IX, no. 1267. These tiles were made at a tilery at Little London, two miles SSW of Silchester, where another stamped example, almost identical, was found in 1925 (*Antiq. Journ.* VI, p. 75 ; illustrated in *Hants Field Club Proc.* XVI, p. 59). I am much indebted to Mr R. P. Wright for these references. The discovery of this imperial tilery is important as showing the central government taking part in the early development of the cantonal capital.

[40] The temple of Neptune and Minerva at Chichester, set up by the authority of Cogidubnus, the client king created by Claudius, is often instanced as the earliest example, but it must not be forgotten that Cogidubnus outlived the rebellion of A.D. 61 and may have reigned for another decade in the light of Tacitus' comment—*is ad nostram usque memoriam fidissimus mansit*. (*Agricola*, XIV).

[41] *Archaeologia* 92, p. 124–5.

[42] D. Atkinson, *Wroxeter*, 1923–7, p. 24 ff.

[43] *J.R.S.* 1947, p. 174.

[44] Wheeler, *Verulamium*, p. 49 ff.

[45] It ought to be possible to re-excavate selected sites at Silchester to get this evidence just as it has been possible to recover much of the history of Bronze Age barrows that have been dug unscientifically.

The Development of the Cruck Framework

by James Walton

THE use of pairs of straight or curved timbers to support the ridge-pole of a primitive dwelling affords one of the most fundamental of all house types. In England, Scotland and Wales, it developed into the complex cruck framework which, although it has many close analogies in north-western Europe, is a unique feature of peasant architecture. Detailed studies of the cruck buildings of northern England have been made by Addy (1), Innocent (2) and, more recently, by the writer of the present paper (3), whilst Sigurd Erixon has published an excellent comparative study of analagous types (4). The object of this paper is primarily to trace the evolutionary stages through which the cruck building and its allied forms passed.

Primary Tong-Support Frameworks

Fundamentally such buildings consist of two pairs of straight timbers crossing at the apex to carry the ridge-tree, and Erixon has introduced the apt term ' tong-support ' for this structure (fig. 1d). In small temporary dwellings and out-buildings such roof supports are still used over a wide area, extending from Scandinavia through Denmark and north-western Germany to Holland, Belgium, the British Isles, Spain and Italy. Erixon has recorded them in association with the *capanna* occupied by the herdsmen and charcoal-burners of the Roman Campagna, as out-buildings in Spain, as cooking-sheds in the Jämtland summer dairies, sheds and barns in Östergötland, Västergötland, Bohuslän and Gotland, and as roof structures over cellars and larder grottoes in various parts of Scandinavia.

There are evidences of structures with inclined tong-supports for the ridge-tree being used as early as the Stone Age in western Germany and from Iron Age times in Denmark and Gotland where inclined post holes have been recorded. A two-roomed house on the early Neolithic site of Katrineholm-Mogetorp in Södermanland, Sweden, is apparently of the same type. Inside the building have been found the remains of inclined post holes probably accommodating a pair of ridge-beam tong-supports standing on the ground within the low stone parapets which constituted vague embryo walls (5).

Hartley and Elliot have illustrated (fig. 1c) an English booth of the 14th century which belongs to the same group (6) and in the so-called ' Teapot Hall ', at Scrivelsby in Lincolnshire, there survived until 1944 a large dwelling having an identical framework with roof and walls at the same pitch (figs. 1a and 1b). In such dwellings the doorway was invariably situated in the centre of the gable wall, a feature impracticable where

[1] Addy, S. O., *The Evolution of the English House*, 1910.

[2] Innocent, C. F., *The Development of English Building Construction*, 1916.

[3] Walton, James, ' Cruck-Framed Buildings in Yorkshire ', in *The Yorkshire Archaeological Journal*, vol. xxxvii, 1948, pp. 49–66.

[4] Erixon, Sigurd, ' Some Primitive Constructions and Types of Lay-out with their Relation to European Rural Building Practice ', in *Folkliv*, 1937, pp. 124–55.

[5] Erixon, Sigurd, op. cit. pp. 138–42.

[6] Hartley, D. and Elliot, M. M., *Life and Work of the People of England in the Fourteenth Century*, 1925, pl. 26 f.

kingposts were employed to support the ridge-tree. In the latter case the doorway had to be placed either to one side of the king-post or in a side wall. Addy has pointed out that ' in the 15th century the gable of such a house, or booth, was regarded as the ' front view ' (7) and it is the logical position for the entrance to such a dwelling.

The straight tong roof support afforded only a very restricted internal living space and this factor was apparently of paramount importance in the initial stages of development. The use of curved cruck supports helped somewhat to relieve the position and such frameworks have a wide range over north-western Europe. They are employed for the ' sheep shelters on German heath-lands, from the Elbe to the moors on the Dutch frontier, and from their use they are known in Low German as " Schapkoven ". As their roofs reach to the ground they are also known, from their shape, as " Dach-hutten ", literally " roof huts " ' (8). Similar structures are known in Scandinavia as ' skali '. The place-name ' skaill ' is found in both Sutherland and Caithness (9) and it extends as far south as the Yorkshire Pennines in such names as ' Winterscales ' and ' Barden Scale ' (10). Innocent has also recorded an example from Huttegen, near Audenarde in Belgium, where the hut is used as a farm-store (FIG. 2e) (11), whilst an identical hut is pictured as a mason's lodge in a carving on a house at Middleburg, Holland (FIG. 2d) (12). The house is dated 1590 which indicates that by that time the simple cruck framework was a relic form in Holland relegated to menial service.

A full account of buildings with cruck principals from Finnmark, known as ' gamme ', has been published by Halvor Vreim : ' A " gamme " with roof and walls in one is made by tree stems being set together two by two at the tops and with some of the roots sunk a little in the ground—the site for the " gamme " has the upper layer of turf removed. At the top of the arch the birch stems are fastened together—either by using the natural forks or by joining them. Such a constructive arch is called in Finnmark Lappish " Bael'lje ". According to the size of the " house " two or more " bael'lje " are set up side by side at a distance of from one to two metres. The width, the span of the frame, usually varies between 4 and 6m. and the length of the " gamme " between 5 and 8. The usual size of the ground plan is a bare 5 by 7m., which approximates to the " gamme " sites of Nummedal at Karlebotn. With extensions of the " gamme " later there are laid above the " bael'lje " three ridges on either side, " vuoggjem ", " gas'ka-val'do " and " raeppen-val'do ". Outside these are placed and laid thin, or split birch branches (" tro " in Norwegian) approximately side by side. Between the layer of " tro " and turf, a layer of birch-bark is put to make the building tight. On that part of the " gamme " which might be described as walls the layer of bark is often dispensed with, being replaced by thin twigs, stone slabs or possibly only grass sods laid side by side—stone slabs may also take the place of the " tro " inside at the lower part of the " gamme ". The outer layer of turf is up to one metre thick at the lowest part. The thickness of the turf layer lessens as it gets higher, until up at the arch it is only about 20 cm.' (FIG. 2c) (13).

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[7] Addy, S. O., op. cit., Revised Edition, 1933, p. 42.

[8] Innocent, C. F., op. cit. p. 23.

[9] Grey, James, *Sutherland and Caithness in Saga Time*, p. 132. (I am indebted to Mr L. R. A. Grove for this reference).

[10] Walton, James, *Homesteads of the Yorkshire Dales*, 1947, p. 18.

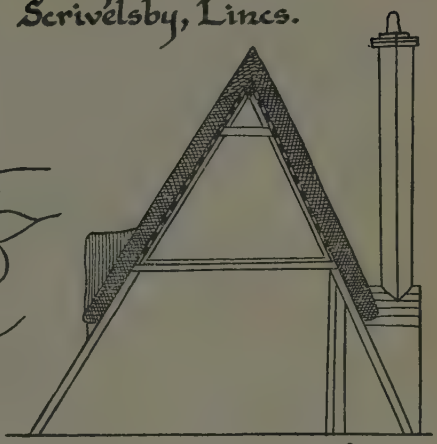
[11] Innocent, C. F., op. cit. p. 24.

[12] Jones, S. R., *Old Houses in Holland*, p. 116.

[13] Vreim, Halvor, ' The Ancient Settlements in Finnmark, Norway ', in *Folkliv*, 1937, p. 194.

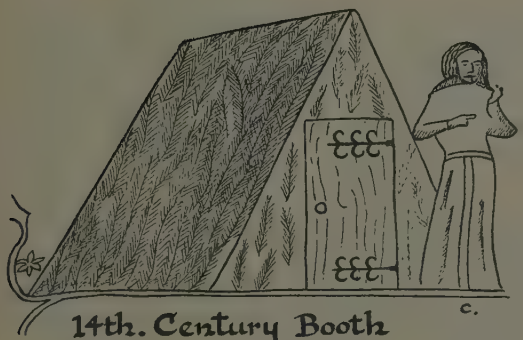
a.

"Teapot Hall"
Scrivelsby, Lincs.



b.

Buildings with Primary "Tong" Supports.



c.

14th. Century Booth

after Hartley, D. and Elliot, M.M.: "Life and Work of the English People in the 14th Century", from Bodl Library MS. 264.

d.

Fundamental Framework

FIG. 1

Late in the 9th century the recumbent shrine-tomb was introduced into England and during the following century ' the idea was taken up by the Danes—that of a little house of the dead, with walls and gables and tiled roof ; the Danes added figures of bears at the gable-ends and ornamented the walls with their own kind of basket-plait and dragons ; and so invented the 10th century " hogback " ' (**14**). The example from Dewsbury (FIG. 2a) is apparently the earliest of its class in the north and Collingwood assigns it to the 9th century. The architectural significance of these ' hogbacks ' has already been discussed by the present writer ; here we are concerned only with the gables, for these usually display the inverted boat form typical of cruck buildings and what appear to be actual crucks are carved on the Dewsbury example (FIG. 2a) (**15**). Since the studding and roofing details are accurately portrayed it seems reasonable to assume that the gable form is also a true representation of the Danish house of that period.

Stone buildings having gables of cruck form extended at one time from Iceland down to the western isles of Ireland and, as Addy has previously suggested, these are ' copies in stone of the boat-shaped type of house, which, in places where wood was abundant, were built of that material ' (**16**). Typical are the oratories of Gallerus (FIG. 2b), Kilmalkedar and Skellig, off the western coast of Ireland, and Nathaniel Lloyd dates the Gallerus oratory as *c.* A.D. 700 (**17**). Addy has drawn attention to a section of the Brehon Laws which state that an Irish oratory of 15 ft. in length and 10 ft. in breadth cost, when built of wood, ten cows, or a cow for every foot in breadth. Published internal measurements of the Gallerus oratory vary from 15 ft. 3 ins. by 10 ft. to 15 ft. by 8 ft. whilst the Kilmalkedar oratory measured 17 ft. 6 ins. by 9 ft. 3 ins., figures sufficiently near those of the Brehon Laws to substantiate the suggestion that these stone oratories were modelled on a wooden prototype.

Fleure and Dunlop have recently excavated a series of alignments at the Braaid, in the Isle of Man, which they conclude represent the side walls of a boat-shaped house comparable to the banqueting hall of Hofstaoir in northern Iceland and houses near Slagelse, in western Zealand. The latter were wholly of wood and relatively light, being within a strong stone-built rampart with an earthen core (**18**). The simple cruck framed house, or its stone counterpart, having the form of an upturned boat, has, therefore, had a wide distribution throughout north-western Europe from at least the Iron Age up to the present time.

Subsequent Development of Tong-support Framework

It was the application of vertical side walls to the simple tong or cruck ridge-tree support which eventually culminated in the English cruck framework as it survives today. Two distinct methods were evolved to adjust the simple framework to the new form. The first was a modification of the cruck shape produced by choosing a tree with a branch at such an angle to the trunk that when it was set up the branch would form a principal rafter. Zangenberg has suggested that this type of framework might have been employed for the Iron Age houses in Jutland (FIG. 3, Stage IIa) and Peate has recorded

[14] Collingwood, W. G., *Angles, Danes and Norse in the District of Huddersfield*, 1929, p. 32.

[15] Walton, James, ' Hogback Tombstones and the Homes of the Vikings ', in *The Quarry Managers' Journal*, 1946, pp. 201–5.

[16] Addy, S. O., op. cit. p. 43.

[17] Lloyd, Nathaniel, *A History of the English House*, p. 10.

[18] Fleure, H. J., and Dunlop, M, ' Glendarragh Circle and Alignments, The Braaid, Isle of Man ', in *The Antiquaries Journal*, vol. XXII, 1942, pp. 39–53.

numerous examples from Wales. He quotes a description by William Williams of a house at Llanberis : ' A tree was searched for having a branch thrown out at an oblique angle like a house-couple ; when it was found, the tree was cut at its base and then set

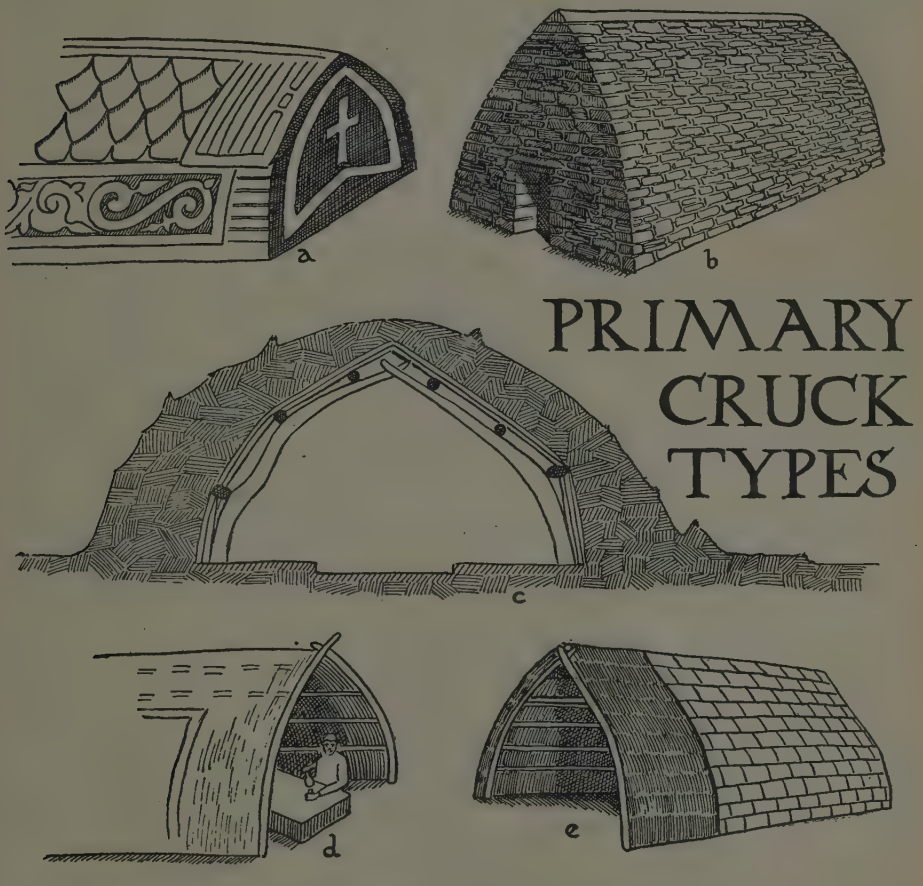


FIG. 2

(a). HOGBACK STONE, DEWSBURY (b). ORATORY, GALLERUS, IRELAND
(c). FINNMARK (d). MIDDLEBURG, HOLLAND (A.D. 1590)
(e). HUTTEGEN, NEAR AUDENARDE, BELGIUM

up where the house was to be, the branch throwing itself up to the ridge like a couple (i.e. a normal rafter). After securing a number of such trees, they were planted in parallel rows and a stone wall built around them (19) '. Two Welsh examples, one

[19] Williams, W., *Hynafiaethau a Thraddodiadau Plwyf Llanberis a'r Amgylchoedd*, 1892, p. 66.

from Denbighshire and one from Merionethshire conform to this type in its early stages (FIG. 3, Stage IIIa).

The elbow cruck was not confined to Wales, although examples are much less frequent elsewhere. The late Rev. J. C. Atkinson described frameworks of this type from Danby-in-Cleveland, Yorkshire. 'At about 4 feet from the surface on which they stand is a curve, such as may be seen in the timber designed to be the stem of a boat, and such also as to allow of a much steeper slope upwards from the ground than would have been possible if the whole had been in one and the same straight line. From this point of curvature, however, the rafters are straight all the way to the ridge piece, and with the old tie-beam would form an almost equilateral triangle. The deflection thus noticed would allow for more available space within than if the rafters had reached the ground in a straight line unbroken from the ridge (20)'. Another house with elbow crucks was recorded from Bournville in a reader's letter to *Country Life*, Nov. 29th 1946.

In general, however, the introduction of vertical side walls resulted in an entirely different development, a development applicable to elbow crucks, normal crucks and straight principals alike. The initial stage is well displayed in a cruck framework in a barn at Tirley, Gloucestershire (FIG. 3, Stage IIb) and in a tong framework from Mappleton, East Yorkshire (FIG. 3, Stage IIc). In these frameworks upright wall posts were introduced to carry the wall-plates which, in their turn, supported the rafters. Although in the Tirley example the two sets of rafters are carried by the crucks, the roof thrust was mainly applied to the wall-posts. These were apparently forced outwards by the weight of the roof and it was found necessary to brace the wall-posts to the principals, as shewn in a cottage at Didbrook, Gloucestershire (FIG. 3, Stage IIIb) and in a barn at Grindleford, Derbyshire (FIG. 3, Stage IIIc). The function of the principals was still mainly to support the ridge-tree, although they also stabilized the wall timbers.

The next stage in the evolutionary process was one which had the most important results for it ultimately linked the ridge-tree supports to the roof members. And yet it was a very simple step, for it was merely the unification of the tie-beam and two braces. In Cheshire, as in a house at Styal and another under Beeston Castle Rock, the tie-beam was extended at each side and its ends morticed into the up-right wall-posts (FIG. 3, Stage IVe) (21). The collar beam was similarly extended to carry the purlins but the wall plates were still joined to the principals by short braces, as at Didbrook. These Cheshire houses appear to represent the final development of a type existing locally in Cheshire and Gloucestershire whose characteristics may be defined as :—(a) Short braces connecting the principals to the wall-plates : (b) Extended tie-beams situated between the wall-plates and ground level and morticed at their ends into the upright wall-posts. A variant of the same framework is used in Jutland, under the name of 'Straeksuler' or 'Stridsuler' (FIG. 3, Stage IVd).

Elsewhere in the British Isles the extended tie-beam was applied to normal and elbow cruck frameworks but with a fundamental difference. The ends were not morticed into the wall-posts or wall-plates, they were left free and carried the wall-plates (FIG. 3, Stage IVa and b). Such structures did not merely support the ridge-tree and prevent the side walls from being pushed outwards, as in the Cheshire and Gloucestershire examples ; they carried the entire weight of the roof. A house at Sutton Bonington, in Nottinghamshire, illustrates a combination of the two lines of development for it has an extended

[20] Atkinson, J. C., *Forty Years in a Moorland Parish*, 1907, p. 25.

[21] I am very much indebted to Mr N. A. Hudleston for information on the Cheshire examples.

tie-beam carrying the wall-plates and a lower tie-beam whose ends are morticed into the wall-plates (FIG. 3, Stage V).

The conversion of a tie-beam with side-braces into an extended tie-beam carrying the wall-plates on its free ends was the main factor in the development of the typical cruck framework but Innocent has outlined a secondary evolutionary feature connected with the method of supporting the ridge-tree (22). Innocent's assumption that this

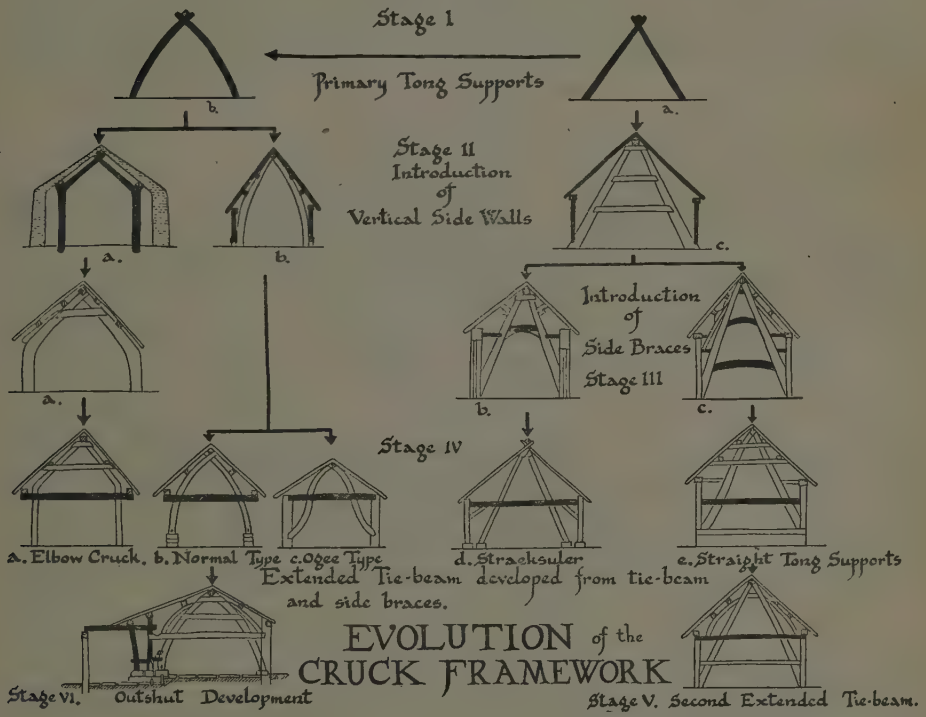


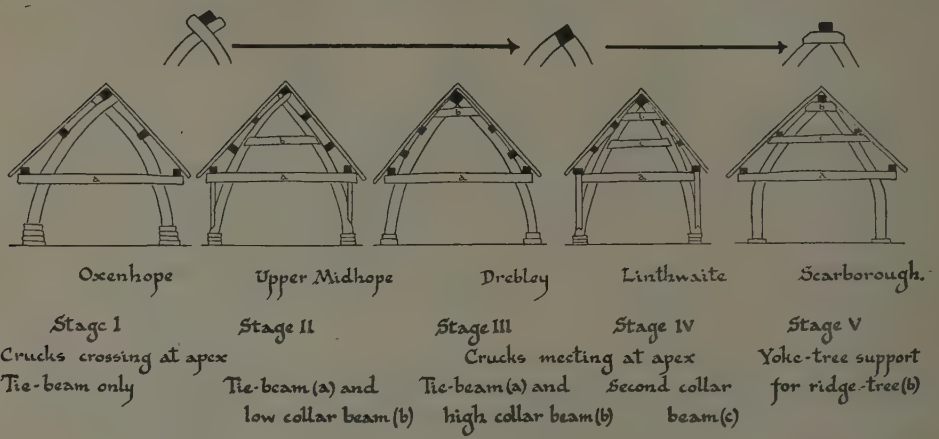
FIG. 3

development was prompted by a desire to conserve timber is open to doubt, but the progressive stages are well defined. The ridge support consisted originally of a pair of crucks (West Yorkshire and Westmorland), siles (Cumberland and Scotland) or forks (Durham and North Yorkshire) crossing at the apex to hold the ridge-tree or rigging-tree. The crucks were bound together by a tie-beam, bottom stressil or bottom tie-baulk, which eventually carried the wall-plates on its free ends (FIG. 4, Stage I). Later it was found advisable to introduce a collar-beam, top stressil or top tie-baulk, midway between the tie-beam and ridge-tree (FIG. 4, Stage II).

[22] Innocent, C. F., op. cit. pp. 50–1.

The next development was the replacement of the fork formed by halving the crucks by a support in which the crucks just met at the apex, so providing an angle to accommodate the ridge-tree. This was a much weaker structure and it was found necessary to move the collar-beam closer up to the ridge-tree to prevent the principals from springing apart at the top (FIG. 4, Stage III) and later a second collar beam was added for the same purpose (FIG. 4, Stage IV). Finally the crucks were sawn off at the top and joined together by a yoke-tree or saddle-tree on which the ridge-tree rested (FIG. 4, Stage V).

The rectangular space between two pairs of crucks was known as a ' bay ' and Addy has put forward evidence to show that the number of bays allowed to each householder was related to his holding in the common fields. If this control was exercized, then



DEVELOPMENT OF RIDGE-TREE SUPPORT

FIG. 4

longitudinal extension, by the addition of extra bays, was restricted. This did not prevent the addition of ' outshuts ' along each side and many cruck-framed buildings display such additions. The outshut extension proved even more difficult than the application of vertical wells and extremely cumbersome structures resulted (FIG. 3, Stage VI).

REGIONAL TENDENCIES

Although the evolution outlined appears to represent the actual stages of development through which the cruck framework passed, the two main trends were not parallel and the various stages have no chronological significance. At ' Teapot Hall ' simple straight principals survived until 1944 and in many districts the evolution was halted at a certain stage from which a local variant developed. Thus, in Gloucestershire and Cheshire we find straight principals joined by tie-beams and secured to the walls by side-braces, but the same type is found to a lesser extent in Jutland and Derbyshire. The elbow cruck is most common in Wales but it has also been recorded from East

Yorkshire. The use of a yoke-tree is predominant in the Yorkshire Wolds and York Moors but again it is not restricted to those areas. Similarly the ogee-shaped cruck truss (FIG. 3, Stage IVc), which is found in the Lake District, also occurs rarely elsewhere. In spite of these exceptions, however, certain types may be associated with particular districts :

(1) Yoke-tree ridge support—in East and North Yorkshire.
(2) Ogee crucks—in the Lake District.
(3) Separate tie-beams and wall-braces—Gloucestershire.
(4) Extended tie-beam midway between cill and wall-plates with braces at wall-plate level—Cheshire.
(5) Elbow crucks—Wales and North-east Yorkshire.

DISTRIBUTION OF CRUCK PRINCIPALS

There is no fundamental difference between the use of pairs of straight and curved principals to support the ridge-tree and both were incorporated in the British cruck framework. Erixon has already suggested that ' the cruck's construction—here taken in its wider, more primary significance than as a direct equivalent to English crucks now manifestable—should be regarded as a local West European-Scandinavian form (23) '. The use of curved principals is more restricted, structures of that form being almost confined to Scandinavia, Denmark, north-western Germany, Holland, Belgium and the British Isles. This distribution indicates that the cradle of cruck construction is to be found in that area embracing north-western Germany, Denmark and South Scandinavia, where it existed in prehistoric times and from where it spread to the British Isles, Iceland, Holland and Belgium.

Support for this supposition is afforded by the distribution of cruck-framed buildings in the British Isles. Batsford and Fry point out that ' few examples of cruck building can be traced much south or east of a line roughly joining the Bristol Channel with the Wash, the only exception noted at present being the little Barley Mow Inn at Clifton Hampden on the Berkshire Thames, which is definitely, though not far to the south-east of it (24) '. The boundary is extended a little to the south by records of a cruck-framed building in Suffolk (25), and another at Lacock in Wiltshire.

Innocent contends that this is probably due to the fact that ' the West and North were the most backward parts of the country in culture, and methods of construction were used there after they had been discarded by the builders of the South and East ' but the complete lack of documentary or architectural evidence of cruck buildings south of the above line renders this contention open to doubt. This southern boundary almost coincides with the dialectal line separating the Southern and Midland forms of the short *u* in such words as *up*, *but*, *cup*, etc., and of *o* in *other*, *ton*, *done*, *some*, etc. (26). It also approximates to the southern limit of the use of flat stone or metal plates for baking flat cakes of semi-crisp bread, known in Westmorland as ' clap-bread ' and in Yorkshire as ' haver-cake '. The region to the north of this boundary, stretching in a southern curve from Suffolk to the Bristol Channel, represents that part of the country which came under Norwegian and Danish influence during the 9th and 10th centuries, either directly

[23] Erixon, Sigurd, op. cit. p. 142.

[24] Batsford, H., and Fry, C., *The English Cottage*, 1938, p. 16.

[25] In a letter to the author from Mr R. J. A. Bunnett, dated 22 April 1948.

[26] Hallam, Thomas, *English Dialect Society Trans.*, 1882.

or by way of Ireland and the Western Isles. The known southern limit of cruck construction in Britain conforms, then, to a cultural boundary approximately coincident with the Norwegian and Danish spheres of influence. The cruck form of the ' hogback ' gable affords further support of the theory that the introduction of this framework was closely related to the Danish and Norwegian settlement. It seems probable, however, that the simple cruck framework for a boat-shaped dwelling reached Iceland, the western islands of Scotland, the Isle of Man and western Ireland in prehistoric times.

REFERENCE TO ILLUSTRATIONS

Fig. 1. Buildings with Primary ' Tong ' Supports

a. ' Teapot Hall ', Scrivelsby, Lincolnshire.
b. Section of ' Teapot Hall '.
c. Fourteenth Century Booth (*after* Hartley, D. and Elliot, M. M.: *Life and Work of the People of England in the Fourteenth Century*, Plate 26f, from Bodl. Library ms. 264, *The Romance of Alexander*).
d. Fundamental ' Tong-Support ' Framework.

Fig. 2. Primary Cruck Types

a. Ninth Century Danish Shrine-tomb, Dewsbury, Yorkshire.
b. The Oratory of Gallerus.
c. Longitudinal section of a Cabin *Gamme*, or *Goatte*, from Trollbugt, Lebesby, Finnmark (*after* Vreim, Halvor: ' The Ancient Settlements in Finnmark, Norway ', in *Folkliv*, 1937, p. 193, fig. 8).
d. A mason's hut depicted on a carving on a house at Middleburg, Holland, dated 1590 (*after* Jones, Sydney, R.: *Old Houses in Holland*, p. 116).
e. A farm store from Huttegen, near Audenarde, Belgium (*after* Innocent, C. F.: *The Development of English Building Construction*, 1916, p. 24).

Fig. 3. Evolution of the Cruck Framework

Stage I.
a. Straight Tong Supports (see Fig. 1).
b. Cruck Principals, Huttegen, Belgium (see Fig. 2e).

Stage II. Introduction of vertical side walls.
a. Primary Elbow Crucks. Transverse section of Iron Age House at Ginderup, Jutland (*after* Hatt, Gudmund: ' Dwelling-houses in Jutland in the Iron Age ', in Antiquity, vol. xi, no. 42, 1937, Fig. 6. Based on a suggestion by Zangenberg, H.).
b. Cruck framework of a barn at Tirley, Gloucestershire (*after* Lloyd, Nathaniel: *A History of the English House*, p. 14).
c. Straight Principal Ridge Support, Mappleton, Yorkshire (*after* Summerson, John, in the revised edition of Addy, S. O.: *Evolution of the English House*, 1933, p. 64).

Stage III.
a. Elbow Cruck Framework Y Gilfach, Llanfihangel-y-Pennant, Merionethshire (from a photograph by Hemp, W. J., in Peate, Iorwerth, C.: *The Welsh House*, 1944, plate 70).
b. Straight principals with side braces, Grindleford, Derbyshire (*after* Addy, S. O.: op. cit.).
c. Straight principals with side braces, Didbrook, Gloucs. (from a photograph by Clayton, Brian C., in Batsford H. and Fry, C.: *The English Cottage*, 1938, plate 12).

Stage IV. Introduction of Extended Tie-Beam.

a. Developed Elbow Cruck Framework, Danby-in-Cleveland, Yorkshire (*after* Atkinson, J. C.: *Forty Years in a Moorland Parish*, 1907, p. 24, and Edwards, William: *The Early History of the North Riding*, 1924, photograph facing page 195).

b. Normal Cruck Framework, Cruck House Farm, Oxenhope, Yorks.

c. Ogee-shaped Crucks from a barn at Field Head, Hawkshead (*after* Cowper, H. S.: *Hawkshead*, 1899, p. 147, Fig. 1).

d. Straeksuler from Jutland (*after* Innocent, C. F.: op. cit. p. 21).

e. Straight principals with extended tie-beam, Beeston, Cheshire (from a photograph by Hudleston, N. A.).

Stage V. Second extended tie-beam, Sutton Bonington, Nottinghamshire (from a photograph by Routh, T. E., in Batsford, H. and Fry, C.: op. cit. plate 13).

Stage VI. Addition of Outshut, The Green, Stocksbridge, Yorkshire (*after* Addy, S. O.: op. cit. p. 94).

FIG. 4. DEVELOPMENT OF RIDGE-TREE SUPPORT

Based on the work of Innocent, C. F.: op. cit. pp. 50–1.

Stage I. Cruck Framework from a barn at Oxenhope, Yorkshire. Crucks crossing at apex to hold ridge-tree. Extended tie-beam only.

Stage II. Cruck Framework from a barn at Upper Midhope, Yorkshire. Crucks crossing at apex to hold ridge-tree. Tie-beam and collar beam introduced mid-way between tie-beam and ridge-tree.

Stage III. Cruck Framework from a barn at Drebley, Yorkshire. Crucks meeting at apex to hold ridge-tree. Tie-beam and collar beam moved close up to ridge-tree.

Stage IV. Cruck Framework from a barn at Linthwaite, Yorkshire. Crucks meeting at apex to hold ridge-tree. Second collar beam introduced between tie-beam and upper collar beam.

Stage V. Cruck Framework from a house at Old Scarborough (details supplied by N. A. Hudleston). Crucks joined at apex by a yoke-tree on which the ridge-tree rests.

The Royal Barrows at Jelling

Excavations made in 1941, 1942 and 1947, and finds and findings resulting therefrom

by Ejnar Dyggve

In line with other endeavours expressive of the spirit of self-assertion aroused in the Danish people at the occupation of Denmark by foreign troops during World War II, the Danish National Museum, subsidized by the State Employment Department and the Carlsberg Foundation, undertook a series of thorough and methodical excavations of the two famous Royal Barrows at Jelling in East Jutland (fig. 1), dating from the middle of the 10th century A.D.

Earlier excavations here, in 1821 and 1861 (1), had been inconclusive. Ample room still remained for hypotheses and suggestions, and divergent views gradually produced quite a literature on the subject (2). Through the recent examination, the most extensive excavations of their kind in Scandinavia, of the southern barrow, the so-called King Gorm Mound, excavated in 1941, and the northern barrow, the so-called Queen Tyre Mound, in 1942 (3), it became possible to eliminate several doubtful points which had confronted people interested in history for more than a hundred years. At the same time, a solid foundation was laid for the future understanding of the Jelling monuments—the barrows and the runestones—the most significant in Danish history, because they bear witness to the kings who united the smaller Danish Kingdoms into one realm (4).

As stated the first organized excavation was aimed at the southern barrow, and of the observations made on this occasion a brief account is here given. During this work, great stress was laid on taking into account also the structure of the mound proper as an object worthy of study and equal in importance to finds of odd objects. Hence a clear picture was successfully formed of the method followed in the construction of these gigantic tumuli (5).

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[1] F. Magnussen, C. J. Thomsen, *Ant. Annal*, IV, 1827. J. Kornerup, *Kongehøjene i Jellinge*, 1875.

[2] A résumé of the various opinions, see : J. Brøndsted, *Danmark* I, 1941, p. 838 ff.

[3] A minor excavation took place in 1947 below the apse floor of the apse in Jelling church (see last two paragraphs of this article). An examination of the floor of the nave was futile as, at an earlier date, in order to instal steam heating in the church, the old layers of soil had been removed. The present style of the church is early Romanesque influenced by English architecture, Francis Beckett, *Danmarks Kunst* I, p. 60.

[4] Ref. Ejnar Dyggve : La fouille par le Musée national danois du tertre royal sud à Jelling en 1941. Rapport préliminaire succinct. *Acta Archeol.* XIII, 1942, p. 65 ff. Dyggve : Jelling Kongehøje. *Nationalmuseets Arbejdsmark*, 1943, p. 19 ff.

[5] Some idea may be had of the magnitude of the work done at the construction of the barrow, from the fact that at the excavation work in 1941, 135,000 wheelbarrows of soil were carted out of the southern tumulus, and this work alone required a gang of 45 men working daily during four months, although in this case only a minor part of the mound was involved. It is obvious, therefore, that considering the facilities of those days and the fact that each single turf for the packing of the mound had to be handled manually, the original construction must have taken years to complete.

The mound, which consists of a stout nucleus covered over with rather thin outer layers, is built on ancient farmland found to have been under culture at an earlier period (FIG. 2). It was fully established that the perfect, regular shape of the mound could not have been obtained without work along methodical lines : around a vertical tree-trunk, well preserved and still in the position where it had been erected in the field to indicate

FIG. 1

the centre of the mound before proceeding with the work. Naturally, as the diameter of the mound is about 78 m. such a starting point for measuring and checking was essential. The nucleus of the mound proper is built up of sod and heath turf laid regularly in layers with all the turves placed carefully upside down. Only surface turves were used, as these form the strongest packing on account of the interlacing vegetation, and hence it may be assumed that an extensive area somewhere in the vicinity must have been denuded to satisfy the demand for this building material. Next a layer of sandy or loamy sods were placed on top of the nicely rounded nucleus of the mound and, for a finish, a covering about 1 m. in thickness, of unmixed humus was spread to afford favourable conditions

for the growing of a green grass carpet (FIG. 2). The necessity of a protective covering of grass is obvious here, where the west wind reigns supreme :—Jelling is in an exposed position, situated between the inclement Jutland plateau and the long, sheltered, forest-clad depressions sloping down to the Vejlefjord shores. The packing material for the mound was carted to the site, but had to be carried into the mound on litters handled by two men. Fragments were found of carts and litters and of such other implements as shovels and spades, all made of oak-wood.

Twice during the construction of the mound work came to a standstill. The first interruption to the work was of short duration and for the purpose of building a peculiar, wooden structure, shown in FIGS. 3 and 4 (6). This wooden structure was about 20 m. long, on a ground plan rhomboid in shape, the long sides pointing directly at the centre of the mound. This geometric relation between the wooden structure and the construction of the mound is significant, proving, as it does, a distinct correlation between the mound and the structure. However, this curious ' building ' was not able to support itself, a fact possible to prove incontestably from the shape of its component parts :—the structure was only capable of keeping its form because it was completely packed around with carefully stacked turf, a fact plainly observable at the excavation of the

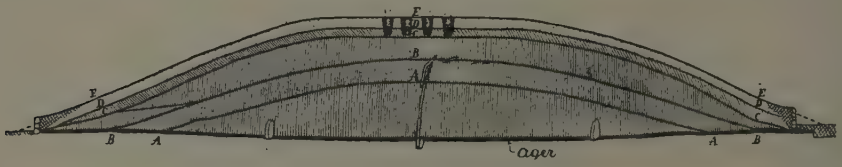

FIG. 2. SECTION OF MOUND

mound. Besides, a similar wooden structure was brought to light at the excavation of the northern barrow (see below).

However, we are not in a position yet to make any definite statement with regard to the purpose of this very peculiar wooden structure ; but the building being merely a dummy, there can be no doubt that it should be regarded as a symbolic representation. An analogy may be found, for instance, in the Nordic ship-settings, which must be regarded as representations of ships (7).

The second interruption in the construction of the mound was more protracted, as is shown by the fact that a substantial layer of grass had time to grow on the surface of the mound. After this interval, the reason for which is open to conjecture, the work proceeded without interruption until the inner mound had reached full height and was completed with the covering of outer layers—the layers explained in the above as being well-founded on technical grounds.

During the excavation a considerable number of monoliths (bauta stones) still largely *in situ* were discovered on the old farmland forming the bottom of the mound

[6] All the wood-work in the mound looked as if it had been stored out-of-doors for only one winter. Much of the wood was hard, the bark and fibre fresh. Vegetable substances of the packing were surprisingly well preserved, and there were instances of some of the workers taking home heather from the turves for planting in flower pots in the hope that they would begin to grow again—a vain hope after a rest of a thousand years.

[7] See J. Brøndsted, *Danmarks Oldtid* II, p. 199 f, III, p. 312.

(FIGS. 2 and 5). They were found arranged in two perfectly straight rows diverging at an acute angle. These stones were carefully secured by means of stone packings in the ground surrounding their bases. From a botanical examination of the lichens once growing on the monoliths, it was possible to extimate approximately how long the stones had been standing in the field before the mound closed in around them. Later, in the account below, we shall revert to these rows of monoliths.

The excavations made in 1942 of the northern royal barrow were not so comprehensive. Here, the earlier excavations, in 1821 and 1861, had disclosed a spacious and costly sepulchral chamber built with boards of oak (8).[8] Now the investigations principally

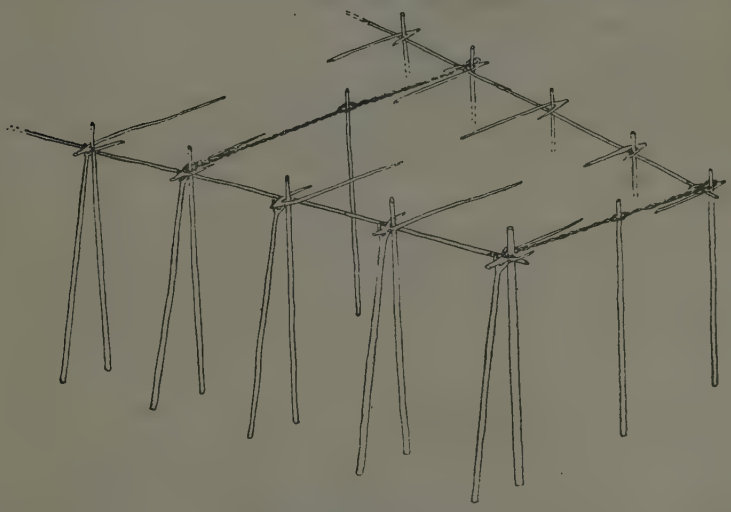

FIG. 3. WOODEN STRUCTURE IN MOUND

aimed at checking previous accounts of the arrangements of the burial chamber and the mound, *inter alia* it was of importance to determine whether, indeed, the sepulchre was placed as high up as it is shown in the earlier drawings and, if so, to find out why. At the same time transverse cuts were made in the grave-yard between the mounds, e.g. at king Gorm's and king Harald's runestones, by the church, and in among the ordinary burial sites.

The northern barrow too was erected on old farmland and built to the same technical plan as the southern barrow, a construction also known from the Danish Wall at Danevirke dating from the same century as the Jelling barrows. The fact that the northern mound at Jelling, as stated, contained a wooden structure similar to the one in the

[8] After the excavation in 1861, the burial chamber of the northern mound was restored and made accessible to the public through a long passage from the south side of the mound ; but the old woodwork could not stand the action of the atmosphere and soon deteriorated. In 1942 it was discovered that the chamber had collapsed completely.

southern mound, though not so well preserved, makes the purpose of the dummy-building still more mysterious. After the burial, the tomb was completely closed without any means of ingress whatsoever. The vertical walls of the sepulchre were covered externally with boulders and clay and, as a further safeguard against robbery, the chamber was protected by a setting of large, fairly uniform, stones (FIG. 6), spread out like an enormous cupola or umbrella over the sepulchral chamber down to its very foot.

The account given in the excavation report of 1861, describing the position of the sepulchral chamber as being high above the level of the surrounding ground caused much surprise to the critical reader, but was nevertheless proved to be correct. Still, the chamber was on solid ground, it being found that the ground surface rose toward the middle of the barrow and, furthermore, that its summit, the highest point at Jelling, was the site of a tumulus of the Bronze Age, the southernmost grave-mound in a large group of tumuli named Mangehøje (many mounds). The choice of the old tumulus as a foundation for the burial chamber had two advantages, first that it made it possible to support the walls of the chamber sunk into the compact soil of the old mound and, secondly, which is the more important, that thereby the royal barrow acquired a commanding position over the surrounding district, fronted, as it was, by a gently sloping area facing south. This southern aspect was specially suited to the purpose of the above-mentioned big bauta stones (see below).

The principal aim of the Danish National Museum investigations in 1941 and 1942, was to find a positive answer to the question :—Did the southern mound contain a burial chamber, popularly thought the tomb of king Gorm, or was the mound erected for some other purpose ? This problem was successfully solved, certain evidence being found to prove that the building of the southern mound was not in conjunction with any sepulture, and that, consequently, king Gorm could not have been entombed in the southern Jelling tumulus.

Strange to say, in the short span of only 200 years since the construction of the barrows, all particulars regarding the interment in either barrow were lost. The fact is this, that even at that early date, according to a literary source (9), it was thought that the remains of the two royal persons were buried separately in their own individual barrow. And in the course of time, local tradition improved on this apparently natural disposition (two bodies—two mounds), indicating that queen Tyre's body rested in the barrow to the north of the church and that of king Gorm's in the southern mound. It is not unlikely that this specific arrangement was suggested by the ancient tradition of a women's side to the north and a men's side to the south, as in the case of the seating in church differentiating the sexes.

Therefore, since an inhumation was quite out of the question as regards the southern mound, interest was focussed the more on the burial chamber in the northern barrow. At an early date, a certain detail in the design of the chamber had suggested a double burial in this mound, among others, J. A. Worsaae, after the excavations in 1861, had propounded the idea that the spacious and once magnificently furnished sepulchre had been the common grave of the remains of the two royal persons. But, as long as the possibility existed that the theory of both mounds being tumuli might be correct, they hesitated to draw conclusions from the aforesaid detail in the arrangement of the burial chamber. Therefore, nor until now, by the latest investigations, has it been

[9] Abt. year 1185, Sven Aggesøn, *Brevis historia, eic.*, ed. Gertz. *Script. min.* I, 1917, pp. 116 and 118.

possible to establish that both king Gorm and queen Tyre, the founders of the Jelling dynasty, had been inhumed in the northern barrow. And, from now, this barrow should be called *The Grave Mound.*

Besides this very definite conclusion another fact was revealed by the examinations, evidence proving that in disposition a close relation existed between the various monuments at Jelling. Comparing the rows of monoliths placed inside the southern mound with various observations made outside this mound—e.g. the line of direction of the churchyard dikes, and early finds of stones looking like bauta stones—I succeeded in proving the surprising fact that these stones were remnants of a large acute-angled area hedged in by monoliths (bauta stones). This area had been closed up at its broad end by Gorm's and Tyre's common mound, and dated from a period previous to the construction of the southern mound (FIG. 7). Later, having dug control-cuts further afield,

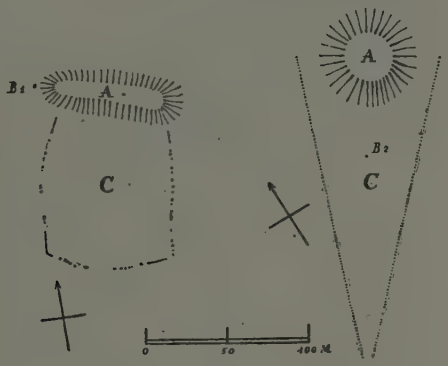

FIG. 7. PLAN OF THE TWO BARROWS AND OF THE BAUTA STONES

I found quite a number of monoliths in perfect alignment with the lines of direction of the monoliths belonging to the southern mound. From this arrangement it can be deduced that the large triangular place formed a sacred precinct, a pagan sanctuary attached to the barrow and hedged in by monoliths (**10**).

Here, in conclusion, I intend briefly to outline the two main phases in the history of the Jelling monuments as disclosed by the excavations and in relation to the two kings, Gorm and Harald, individually. The first lay-out consists of the Gorm and Tyre barrow in conjunction with the large triangular space, the pagan sanctuary on the area fronting the grave mound. In this sanctuary, the runestone in commemoration of queen Tyre was raised. The lay-out in itself was planned by king Gorm but, naturally, it was not possible for king Harald to complete the mound until after the death of king Gorm.

[10] See fig. 7, which shows a comparison between the sanctuary at Jelling and a cromlech near Kerlescan in Brittany. A : tumulus ; B, 1 : menhir ; B, 2 : runestone ; C : *area* surrounded by upright stones. Despite the wide span of years separating them, the dispositions are in close agreement, a phenomenon which I suggest may be explained by the partiality to the archaisation so much in evidence in the Viking Age.

As interment in barrows is a pagan funeral custom which, no doubt, would have been opposed by the clergy, it is evident that king Harald at that time had not quite submitted to the influence of the Church.

At a later date, but before the big runestone was finished, Harald must have accepted the Christian Faith and thereby become induced to adopt a different attitude to the shaping of the pagan lay-out as originally planned. The heathen sanctuary is abandoned and rearranged on a smaller scale to form a Christian sanctuary, namely a Christian burial ground, to some extent retaining the old boundaries. King Harald puts up the big runestone showing an image of Christ—the oldest representation of Christ in the Northern countries—next to Gorm's memorial stone to Tyre, and he lets the south mound be built across the acute angle at the apex of the former pagan sanctuary. In keeping with the spirit of the time, the idea behind the construction of this tumulus may very well have been the glorification of the king's own deeds and, correspondingly, the same expression of self-glorification is so much in evidence in the Runic inscription on the big runestone. The possibility that the southern tumulus was intended for a cenotaph, a token interment, without any body, is hardly to be imagined under Christian conditions, and particularly unlikely regarded from a local point of view, when so intimately connected with the Danish court as here : the King's Court and the plans emanating from this central post with an eye on the interests of the Christian mission would naturally be under the constant control of the Church.

It is probable, rather, that the leaders of the Christian mission desired—and brought about—that the bodies of the royal parents, who, as founders of the dynasty were no less important in ecclesiastical than in state politics, were translated from the sepulchre of the northern barrow for a burial in a Christian manner. This may have involved the translation of the bodies to the apse of a newly built church, which would no doubt be there at the Jelling Christian sanctuary—or, rather, perhaps—for the political reasons given—a translation to the town of Roskilde in Sealand, the geographical centre of the newly re-united Danish kingdom, to where king Harald, with a realistic sense of the consequences of the unification, had removed his residence. It is a historical fact that Jelling was abandoned and forever lost its significance. There is reason to recall that king Harald, who died about 986, caused a cathedral to be built at Roskilde, dedicated to the Holy Trinity, and that he is buried in this church. Besides conforming to the ideas of the time (**11**), such a translation of ancestral remains is also indicated by the absence of human bones when, at some time, the sepulchral cell was opened and examined, proving that the remains must have been removed and brought to some other burial place. And here, in particular, attention should be given to the excellent state of preservation characteristic of all the organic finds in the mounds.

In 1947, working along the lines described in the above, I made a search of the ground below the apse of the Romanesque Jelling church in an attempt to find evidence of a crypt or of some other ancient entombments. In the 17th and 18th centuries, for the sake of some clerical funerals, a large area of the apse had been most thoroughly dug up, even down to virgin soil, but, in spite of this, it was evident from the investigations that

[11] An analogy of a similar authentic translation : Skjalm Hvide, ancestor of the most powerful aristocratic family in Denmark, buried in the family church at Fjenneslev village and later translated to the large Conventual church at Sorø town, built for his own interment by Skjalm Hvide's grandson, Absalon, the most famous bishop in Danish history. The historical tradition of King Canute the Great, grandson of King Harald, who translated the earthly remains of the Archbishop Aelfheah from his tomb in St. Paul's, London, to greater honour at the altar of Canterbury Cathedral, proves that the idea of translation was in no way foreign to the Jelling Dynasty.

PLATE I

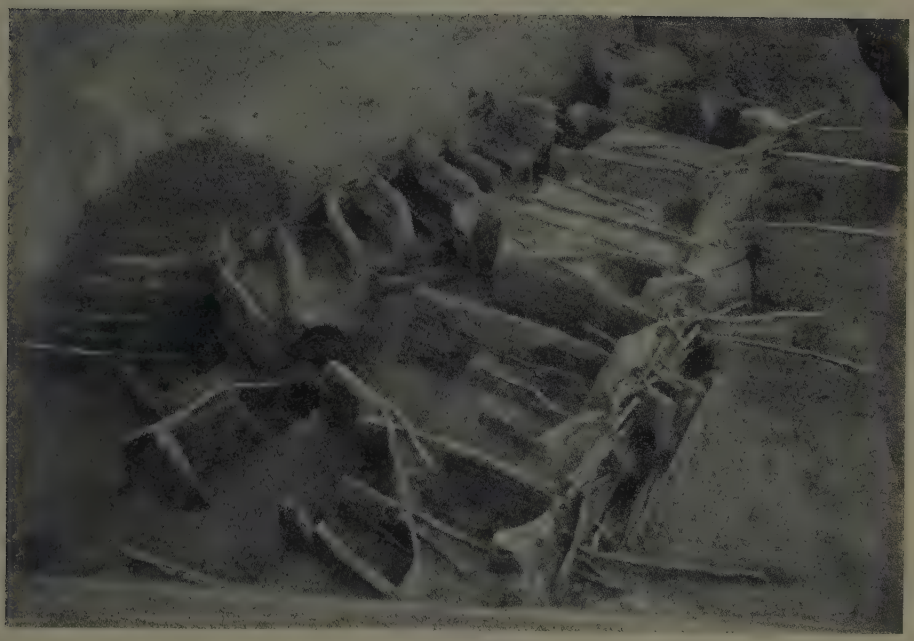

FIG. 4. WOODEN STRUCTURE IN MOUND

facing p. 196

FIG. 5. BAUTA STONES IN MOUND

Fig. 6. 'CUPOLA' OF BOULDERS PROTECTING TOMB

PLATE IV

Fig. 3

Fig. 2

Fig. 1.

no crypt had ever existed there, and that neither below the old altar sanctuary nor in its immediate vicinity had any interment taken place. This result, therefore, definitely points to Roskilde as the new centre of power of the Jelling Dynasty (**12**).

In reality, however, the most significant, most surprising and unexpected result of the excavations remains the discovery of the enormous area of the sanctuary at the Gorm-Tyre tumulus. This pagan design, grand and regal, is geometric in its conception, typical of the architectural ideas of the Viking era (**13**). Gigantic as this monument is, it stands as evidence of the highly developed technical skill of that period, yet pre-eminently of the exuberant power of the *Jelling Dynasty* and the Danish Kingdom. That royal race, we know, united all Denmark into one kingdom and organized our defence to the south at Danevirke. It went in for the christianization of the Danish people (**14**). It won Norway. It conquered England, and created conditions essential for the formation of a Great Britain by the fusion of Britons, Anglo-Saxons and Danes.

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[12] A translation would also explain why the actual circumstances of the burial mound were so early lost sight of.

[13] Dyggve. Om nordisk Arkitekturopfattelse i Vikingetiden med Udgangspunkt Jelling. *Vejle Amts Aarbog*, 1943, p. 3 ff. Ref. the military establishment from the Viking period excavated at Trelleborg, Sealand, by Poul Nørlund: *Fra Nationalmuseets Arbejdsmark*, 1936 and 1938.

[14] A last minute fact, before going into print, is of a find I made, in the spring of 1948, of a church on King Harald's ' Vi ', under the apse of the present Jelling church. These are the remains of a stave-church dating from the time of the establishment of Christianity as the state religion of Denmark, thus showing that it is the oldest excavated church in all Scandinavia.

Mesopotamian Archaeology: a review

by V. Gordon Childe*

IT is a mark of a discipline's maturity when scientists begin to show an interest in the history of their science. This book by a distinguished archaeologist might then be welcomed if only as a mark that archaeology has reached that degree of maturity. But of course the book's merits go far beyond that and will indeed appeal to many who are not archaeologists in any sense.

The story of archaeological exploration in Mesopotamia is highly instructive and romantic, but also tragic. The author tells it well in an attractive prose style with a few happily chosen illustrations reproduced from early 19th century originals. More than half the volume is occupied by biographical accounts of those who laid the foundations of Western knowledge of the monuments of Iraq, from 16th century merchant-voyagers who casually mentioned them to Botta and Layard who began to excavate them. Lloyd has the power to pick out and vividly recapitulate such incidents in the actors' lives as shall bring out their characters without distracting attention from the central theme. At the same time he uses their descriptions of scenery and customs, often sharply contrasted with those he knows so well today, to build up a rich and variegated panorama of the natural and human background of Mesopotamian archaeology. Students of Near Eastern civilization who have not themselves had the opportunity of visiting even Mosul, Baghdad, Ur and Basra will find these passages, in which 19th century observations are illuminated by comparison with contemporary experiences, extremely helpful.

Not less useful is the comprehensive folding map at the end. It shows all important ancient sites with indications of the archaeological periods, from Palaeolithic to Islamic, represented at each and also the limits of the Persian Gulf in ' Sumerian times ' and ' about 4000 B.C. '. The figure 4000 is of course taken conventionally and may well be too low ; the area of dry land shown as formed in the last 4000 years is less than half the total area reclaimed from the sea ' since 4000 B.C. '. As both the coast lines ought to be determinable accurately, the rate of silting should be deducible and thus afford fairly reliable limiting dates for prehistoric cultures ; the al'Ubaid settlement at Uruk for instance was allegedly founded very soon after the emergence of a patch of dry land to be its site.

In the early chapters we are introduced to Rich, a linguistic prodigy who became the East India Company's Resident in Baghdad and there laid the foundation of the British Museum's Assyrian-Babylonian collection, to Buckingham, Chesney and so to Rawlinson. Incidentally we read a vivid account of the disaster to the Euphrates Expedition when a sudden storm overwhelmed Chesney's flagship a little above the site of Mari, and of the great plague and flood that devastated Baghdad in 1831.

Only thereafter begins the story of ' excavation '—less unfamiliar but retold with great verve. Layard began his epoch-making excavations at Nimrûd with a personal subsidy from Canning, formerly ambassador at Istanbul. Only after he had secured such dramatic finds as the Nimrûd Ivories were the Trustees of the British Museum

* *Foundations in the Dust*: a Story of Mesopotamian Exploration by Seton Lloyd, pp. 237. Oxford University Press [Geoffrey Cumberlege, London], 1947.

induced to support the excavations from public funds. Even then their support was niggardly in contrast with the farsighted policy of the French Government in respect of Botta.

Layard was granted only £2000 in order ' to obtain the largest possible number of well-preserved works of art at the least possible outlay of time and money '. Evidently the Trustees were not interested in the architecture of cities or even palaces—the setting in which alone the aesthetic qualities of those ' works of art ' could be justly appreciated. Still less did they comprehend that works of art are but one aspect of a culture from which they can be torn only at the risk of loosing their meaning. The Trustees were in fact willing to spend a little public money to secure show pieces, but not to recover the culture of ancient Assyria.

Even for that narrow aim the funds were inadequate. Not only were many potential exhibits overloked because the rooms of the palace could not be thoroughly explored, but many handsome specimens actually exposed—crested helmets, iron armour, copper vessels, sculptured pedestals—' fell to pieces ' without even being accurately drawn. Objects that could not safely be transported were simply reburied while many of the smaller finds were stolen or smashed in their circuitous journey to London—via Bombay ! If Layard's operations at Kalah and subsequently at Nineveh and elsewhere sound today more like gorgeously profitable treasure-hunts than scientific excavations, that was mainly due to his faithful obedience to the instructions of the British Museum.

Still, such public excitement was aroused by Layard's finds when they did eventually reach London, that the Trustees were prepared to spend £4000 on a further campaign—a sum from which the Treasury promptly knocked off one quarter. This time too they meant to provide Layard with an artist to help in copying sculpture—but still of course no architect. This second campaign led to the discovery of Ashurbanipal's library. But the immediate effect of this on Mesopotamian archaeology was to convert excavation into a tablet-hunt, and soon to let loose upon the mounds a horde of greedy peasants and dealers who scrabbled for inscribed documents to sell with even less regard for their contexts than the European searchers after works of art.

But by now there was an ' Assyrian Excavation Fund ' competing with the British Museum. It financed Loftus' expedition, the first to excavate at all seriously in Lower Mesopotamia. He discovered the mosaic temple at Uruk-Warka which 75 years later, after German archaeologists and architects had systematically explored the site, became famous as the oldest monumental building then known and representative of a hitherto unsuspected phase of Mesopotamian culture. But the patrons of the Assyrian Excavation Fund, who included a Bond Street firm of art dealers, wanted portable relics as much as their rivals, and mud-brick buildings, even when embellished with clay nails, were not saleable on the London market. Loftus left at least good sketches of the remarkable building and did bring back from Tell Sifr a number of copper implements that, till 1925, remained almost the sole examples of the everyday equipment of the ancient Babylonians available in Europe. Not being works of art, however, these, when they eventually reached the British Museum were separated from other Assyrian-Babylonian antiquities and deposited in the British and Medieval Department. Incidentally Lloyd reminds us that Loftus encountered plenty of lions in Lower Mesopotamia.

In 1852, Rassam, a native of Mosul, who had previously worked under Layard, took the latter's place as official treasure-hunter for the British Museum and a rival of the French architect, Place. Competitive excavation made the further exploration of Ashurbanipal's palace even less scientific than the operations of Layard. Fortunately Rassam's campaigning terminated after a year.

For twenty years thereafter British sponsored excavations ceased till the publication by G. Smith of the Assyrian version of the Flood story in 1872 revived such keen interest that the *Daily Telegraph* was able to raise £1000 to send Smith back to Kuyunjik to search —successfully as it happened—for the rest of the tablet. Then the British Museum began once more to finance treasure-hunts, directed at first by Smith and, after his death in 1875, once more by Rassam. Now the latter operated on such an extensive scale that he could not personally supervize all digs but left much to native foremen who, though paid by the Museum, actually seem to have disposed of many of their finds to dealers. Rassam certainly did find the famous bronze gates of Shalmaneser II, but made no accurate plan of the site nor even of the pieces themselves. Hence not only do we lack knowledge of the precise function of these splendid works, but can even doubt whether they came originally from Balowât at all ! Lloyd devotes a useful excursus to vindicating Rassam's account that had been impeached by Budge.

Hence the result of leaving excavation in Iraq to the direction of philologists and connoisseurs—with at least one honourable exception in Place—was that scarcely a single Mesopotamian building had been completely disengaged and planned, and no complete town surveyed, at the end of last century, while the small relics that reveal the life of a people and afford the basis for a scientific chronology had been utterly neglected ; Sayce appealed in vain to Assyriologists to preserve, study and publish pottery. It was left to German expeditions, first entering the international scramble for Assyrian antiquities as late as 1899, to remedy this deplorable situation.

Koldeway's work at Babylon and Andrae's at Assur have recovered the plans of whole Mesopotamian towns and repeopled them with living human beings to an extent that neither Herodotus' description of the former nor the Assyrian guide-book to the latter could do. The Germans created techniques—for instance for defining mud-brick walls—that American, English and lastly French excavators slowly learned to copy. At Assur, Andrae did still more. His stratigraphical excavation of the Ishtar Temple was the first application to Iraq of the sole reliable method for recovering the history and the prehistory of an ancient site. Its applications since 1921 and their exciting results are mentioned only briefly in Lloyd's last chapter. Indeed the author himself even in the current year has been giving the most dramatic demonstration of the value of the stratigraphical method at Eridu. The advent in Iraq of architects and excavators schooled in the methods of Petrie or of European prehistory but mostly innocent of philological and aesthetic training, has revolutionized Mesopotamian history too.

The Date of Cunedda

by A. H. A. Hogg

In the course of a recent paper (1), Mr Peter Hunter Blair has put forward arguments for placing the transfer of Cunedda and his sons to North Wales half a century later than the previously accepted date of about A.D. 400. The historical significance of this migration depends to a great extent on the period at which it took place, as it can be interpreted either as part of the Roman organization of the province, or as a response by the Britons themselves to the dangers which surrounded them after the Roman departure. The writer is not convinced by Mr Hunter Blair's arguments, and it seems worth while to set out the reasoning which has led him to prefer an earlier date. The evidence available also yields some information as to the progress of romanization among the native states north of Hadrian's Wall.

If the early historical evidence is accepted, an approximate date for Cunedda's migration is given by the statement in Nennius' *Historia Brittonum* (2) that it took place 146 years before the reign of Maelgwn, who died according to the *Annales Cambriae* in A.D. 547 or 8. Further the *Historia* states that Cunedda was accompanied by eight of his nine sons. The Harleian M.S. 3859 (3) gives the genealogies of Cunedda and his descendants, and it will be convenient to summarize here the descent of Maelgwn's branch of the family. Giving the latest name first as in the genealogies themselves the relevant part runs :—Catguallaun (ob. 631), Catman, Iacob (ob. 613), Beli, Run, Mailgwn* (ob. 548), Cadwallon* Lauhir, Enniaun Girt, Cunedda*, Aetern, Patern Pesrut, Tacit (4), Cein, (Guorcein), Doli, (Guordoli), Dumn, (Gurdumn), Amguoloyt. The significance of the ' names ' given in parentheses will be discussed later. With the earlier names we are not concerned.

It is from this genealogy that a difficulty arises, as the customary allowance of 30 years to a generation is incompatible with the 146 years mentioned in the *Historia Brittonum*. Mr Hunter Blair asserts that ' the gap is too wide to be spanned by any normal allowance for error ', and rejects the figure of 146 years, and it is primarily on this argument that he bases his suggested date of *circa* A.D. 450 for the migration.

Before rejecting one of our two meagre fragments of historical evidence, however, it seems worth while to consider the third possibility, that the arbitrary figure of 30 years to a generation is at fault.

It is evident that this can be no more than a rough approximation, and that for any single generation the interval between dates of birth may vary from 20 to 45 or 50 years, or even more in exceptional cases. It is unusual to find a series of several generations all of which are characterized by the longer intervals, and it is therefore to be expected that as the number of generations considered increases the average length will approach nearer to 30 years. This, however, refers to the intervals between dates of birth, and the

[1] P. H. Blair. The Origins of Northumbria. *Arch. Ael.*, 4 ser., vol. XXV (1947), pp. 1–51.

[2] § 62.

[3] Ed. E. Phillimore. *Y Cymm.*, IX, 141–83.

* The spelling of these names has been altered to agree with that used elsewhere in this note.

[4] A later and less reliable M.S. (Jesus Coll 20) inserts Genedaoc and Iago between Cein and Tacit. *Y Cymm.*, VIII, p. 85.

dates recorded in early annals are usually those of deaths. In this case, a further source of variation will be introduced. If, for example, the last member of a genealogical sequence lived to be 80, whereas the earliest had died at 40, the total interval between their deaths would exceed that calculated from the ' 30 year rule ' by 40 years, even if each successive member had been systematically born on his father's thirtieth birthday. In the three generations from Cunedda to Mailgwn there is therefore a possibility of a large departure from the average of 30 years.

If, as a minimum requirement, we assume that Cunedda's son Enniaun was 14 years old when the migration took place, and that the 146 years is to be reckoned from Mailgwn's death, it is necessary to show that an interval of 160 years may elapse between a man's birth and the death of his grandson. Such an interval is in fact surprisingly frequent. To find three well-attested examples it was not necessary to search beyond the name Aldersey in Burke's *Landed Gentry*. The three intervals found were 169, 160 and 167 years (5), so that there is in fact no need to reckon the 146 years from Maelgwn's death but some years may be allowed for his reign. Further, it is evidently physically possible for intervals of as much as 180 years to occur. One of about 180 years was encountered accidentally by the writer and although not so well attested as those quoted above seems to deserve mention here (6).

The other argument against a late 4th century date for Cunedda's migration is that it is unlikely that Scottish settlements could have been established in Wales before A.D. 383, when the Roman garrisons were withdrawn. Collingwood, on the other hand, considers that under Constans the Scots were allowed to settle in Wales with the position of *foederati* (7).

It is therefore unjustifiable to reject either piece of early historical evidence for the date of the migration, as they contain no incompatibilities and nothing essentially improbable. Indeed, the genealogies themselves suggest that the apparent difficulty arises merely because Maelgwn lived to a great age, although his death was due to a plague. The dates of death of Iacob and Catguallaun, three and five generations later, only allow an average of 22 and 17 years to a generation, whereas working back from them the standard average of 30 years would place Cunedda's death in about A.D. 390 or 420. As pointed out above, the accuracy of the ' standard ' is likely to improve with an increasing number of generations. The transfer, therefore, took place towards the end of the Roman period, and it remains to consider the circumstances in which it is likely to have occurred.

Before doing so, it is necessary to clear away a misapprehension as to the territory held by Cunedda and his probable position among the Votadini. Manau of the Votadini, from which Cunedda came, was apparently a relatively small territory around what is

[5] (*a*) Under Adderley, in the Broughton branch of the Broughton Adderleys, Peter, b. 1745, d. 1827 ; Peter, b. 1788, d. 1870 ; John Lambart (2nd son), b. 1831, d. 1914. Interval 169 years.

(*b*) Under Aitken, in the Chetwood branch of the Chetwood-Aitkens, Knightley, b. 1679, d. 1752 ; Valentine Knightley (4th son, only one having issue), b. 1708, d. 1771 ; Jonathan, b. 1757, d. 1839. Interval 160 years.

(*c*) Aldersey. Thomas, b. 1634–5, d. 1715 ; Samuel, b. 1673, d. 1741 ; Samuel (last surviving son), b. 1714, d. 1802. Interval 167 years.

[6] Alexander the Steward, b. 1213–14, d. 1283 ; Andrew Stywart, b. *circa* 1278, d. *circa* 1350 ; Alexander Stuart, b. 1329, d. *circa* 1394 (alive in 1390). Interval 176–180 years. *Cambridge A.S. Proc.*, vol. XXVII (1924–5) to face p. 87.

[7] *R. Britain and the English Settlements* (1st edn.), p. 283.

now Stirling (8). It is misleading to apply the name to the whole territory of the Votadini. The names Clydno of Eidyn and Catrawt of Calchvynydd (Kelso) (9) in the 6th century, and the account in the Gododdin of the host raised by Mynyddawg, ruler of Eidyn towards the end of the same century (10), suggest that the country between the Walls was divided up into a number of small 'kingdoms'. There is no indication whether their rulers were independent or, as seems more probable, were subject to the most powerful among them, but in any case they seem to have been closely inter-related by birth or marriage.

Manau, Cunedda's territory, was however of great importance strategically, as it includes the lowest crossing of the Forth and its inhabitants would therefore suffer the first impact of any Pictish movement to the south, so that although there is no reason to interpret the record of Cunedda's migration as implying that the major part of the Votadini moved to Wales the removal of a relatively small number of men from Manau itself might have a disproportionately serious effect. It is against this background that the transfer must be considered.

Collingwood suggests (11) that it was part of Stilicho's work of reorganization, about A.D. 395 or later. This places the beginning of Maelgwn's reign in A.D. 541, only about seven years before his death. It seems difficult to reconcile this short reign with the description which Gildas gives of it (12), and with the indications which the genealogies give as to his long life. Further it is hard to believe that Cunedda and all his sons could have escaped unharmed from the Pictish raids which followed the departure of Maximus and still have retained sufficient military credit to be entrusted with the task of clearing the Scots from Wales.

This consideration leads to the suggestion that the transfer was arranged by Maximus, as part of his plans to reduce as far as possible the dangerous situation created by his removal of the regular troops in A.D. 383. This gives Maelgwn a reign of 19 years, from A.D. 529, but stretches the interval from Enniaun's birth to Maelgwn's death almost to its limit. If Enniaun is regarded as 15 years of age at the date of the migration, he would have been born in A.D. 368, 180 years before the death of his grandson. As has been shown above, even this interval is not impossibly long, but it would not involve great violence to the early records to assume that Enniaun was in fact born later or even after the transfer. Chronologically, therefore, the date of A.D. 383–4 for the migration is possible, but the position of Manau is so important strategically that it is difficult to understand why the inhabitants were encouraged to move from there rather than from some less vulnerable area. The explanation may be that Maximus decided that the presence of Hadrian's Wall justified withdrawing men from beyond it, and called for voluntary levies to take over the defence of Wales without specifying any particular district from which they were to be drawn. If that were the case, the move might well appeal to Cunedda and his people, who would have particularly good opportunities to learn the intentions of the Picts.

The association with Maximus therefore seems preferable to that with Stilicho, and this view derives some support from later Welsh traditions. In the Iolo M.S.S. some

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[8] Watson, *Celtic Place-names of Scotland*, p. 103; O.S. Map of Britain in the Dark Ages, North Sheet.

[9] Ibid., p. 343.

[10] ANTIQUITY XVI (1942), pp. 237–57.

[11] Loc. cit., p. 283.

[12] §§ 33–35.

extracts are given which contain traces of what seems to be an ancient tradition (13). Its antiquity is supported by the way in which elements apparently from the same original source are worked up in a rather confused way in different extracts, so that in spite of the atmosphere of suspicion which nowadays surrounds these M.S.S. it is probably genuine. The extracts seem to indicate that Cunedda's grandson Cadwallon Lauhir killed Serigi, the last leader of the Scots, and that Serigi was the grandson (or son) of Urnach, who killed and was killed by Owen Vinddu, a son of Maximus. There is nothing inherently improbable about this, and it provides yet another indication that Cunedda was active in the late fourth century. Further, it associates Maximus with efforts towards the expulsion of the Scots. But this tradition, although interesting, cannot be regarded as very weighty evidence.

The evidence provided by Cunedda's genealogy about the progress of romanization among the Votadini deserves a brief discussion. Accepting a date 380 or 390 for Cunedda's migration, his birth would fall about 340, and those of Aetern, Patern, Tacit and Cein about 310, 280, 250 and 220. The Roman character of these names was pointed out by Nicholson in an interesting paper (14) which seems to have been rather unjustly neglected. Nicholson suggested that Aeternus, Paternus, Tacitus and Ceionus were names adopted on accession, and that Cunedda's ' genealogy ' was a table of succession. He also showed that all these names occur at about the right time in Roman history. Aeternus was a title borne on their coins by Diocletian (284–305), Maximinian (d. 310) and Julian (360–363). There were consuls named Paternus in 233, 267, 268, 269 and 279, an emperor Tacitus in 275–6, and a consul Ceionus in 240. The agreement in date for Tacit and Cein seems too striking to be a mere coincidence*, but even if it is accidental the romanized section of the genealogy must start in the first half of the 3rd century. This is in agreement with the evidence from Traprain Law which indicates that the site was probably reoccupied about this time after an interval.

It seems therefore that the first step towards the creation of a semi-independent romanized state from the Votadini is to be associated with the 3rd century frontier system (15) rather than with the settlement of Constans as suggested by Dr Richmond (16). There is never any difficulty in finding some occasion upon which Patern could have earned his scarlet cloak, but with the dating suggested here it would probably have been bestowed on him for his assistance to Constantius.

It is not surprising that the Votadini survived the troubles of A.D. 367 and the other disturbances of the 3rd and 4th centuries, as the main routes from north of the Antonine Wall into the Roman province bypass most of the tribe's territory, and the riches of the south would be a far stronger attraction than the few cattle of the proverty-stricken herdsmen of the Cheviots and Lammermuirs. Manau itself must have suffered, but there is nothing to show that it was the home of Cunedda's ancestors.

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[13] *Iolo M.S.S.*, pp. 471, 472, 474.

[14] The Dynasty of Cunedag . . . E. W. B. Nicholson. *Y Cymm.*, XXI (1908), p. 62. In parts the paper seems rather speculative, but it contains many suggestions of great value.

* It is tempting to go a step further. By assuming that the names were given at birth, and making Tacit and Patern brothers, one can obtain a reasonable dated genealogy, Cein (b. 240) being succeeded by his son Tacit (b. 275 or 6) who was succeeded by his brother Patern (b. 279). Patern's successor would be either his son or nephew, born about 305 or 310.

On account of its speculative character this suggestion has been relegated to a footnote, but it involves no more disregard of the early sources than is customary in dealing with this period.

[15] I. A. Richmond. Romans in Redesdale. *Northumberland Co. History*, vol. XV, p. 95.

[16] Ibid., p. 114.

Indeed, the appearance of his Celtic name after the Roman sequence from Cein to Aetern suggests strongly that he was one of the younger sons of the ruling family. As such, it is at least possible that he took over the territory after the defeat of the Picts.

Finally, it seems worth while to dispose of the hint of a ' Pictish ' strain in Cunedda's line, suggested by the resemblance of the names Cein, Guorcein, Doli, Guordoli, Dumn, Gurdumn to the ' doublets ' of the Pictish king list. These have been explained convincingly by Nicholson (**17**), who suggests that ' Guor ' has the significance of ' before ',* and that the ' map ' which precedes each ' name ' was inserted by an unintelligent compiler. The form is therefore evidence for the antiquity of the list, but does not imply any ' Pictish ' connexion.

To sum up, it has been shown that there is no reason to doubt either of the early sources which provide evidence for the date of Cunedda. Accepting these, Cunedda's migration must be associated either with the activities of Magnus Maximus or with those of Stilicho, more probably the former. The evidence of Cunedda's genealogy shows also that the romanization of the Votadinian territory was probably commenced early in the 3rd century. A.H.A.H.

Mr Hogg's views on the date of Cunedda's migration seem to involve the acceptance of a number of improbabilities. (1) His examples of longevity in modern times reveal only the exceptional and they should not in any case be applied to the 5th and 6th centuries. (2) Between the death of Maelgwn and that of his great-grandson the records attest an interval of about 65 years. Mr Hogg is prepared to accept an interval of either 128 or 158 years between the death of Maelgwn and that of his great-grandfather. (3) He supposes Enniaun, the seventh of Cunedda's nine sons, to have been 14 at the time of the migration. In order to escape the necessity of believing that Cunedda took with him on an important military expedition three children of 14 and under he takes refuge in a direct contradiction of the passage in the *Historia Brittonum* by suggesting that Enniaun, and presumably his two younger brothers, may not have been born until after the migration.

Where there is so little evidence no opinion can be more than conjectural, but a conjecture should not rest on abnormal presumptions. Mr Hogg's views are physically possible, but I find it more difficult to accept the improbabilities involved than to believe that there has been an error in transcribing the numeral 146.

PETER HUNTER BLAIR.

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[17] loc. cit.

* This explanation applies equally to the ' ur ' of the Pictish list.

Notes and News

BALKS AND THE OPEN FIELD SYSTEM (PLATE IV)

Col. Drew's confirmation (1) of the existence of unploughed balks* between arable ' strips ' is corrobated by remains still to be found in the parish of Upton St. Leonards, near Gloucester.

Some land in this parish had been enclosed in the 18th century, but a considerable area was still worked on the old ' openstrip ' system throughout the 19th century, until an Enclosure Act, ratified on October 18, 1897, led to the remaining fields being shared between the owners and enclosed.

The rector of the parish at the time, Canon Scobell, published a rather diffuse paper describing the results (2). In this he published two photographs. The more important shows, in a level field, a balk or ' meer ', as it was locally known, of unploughed grass between two strips. The end of this balk is marked by a ' meerstone ', on which is carved the initial of the owner's surname. The second photograph shows an open field on a steep hillside. Here the ground has been ploughed into lynchets which follow the contours. Balks, of course, do not occur between these strips.

The balks themselves have, in the intervening years, been ploughed out of existence, as far as I can trace. Meerstones, however, can still be found in the parish in considerable numbers. Nowadays they are used as pillars for ornamental staddle-stones, as curbs at the corners of narrow lanes, as rubbing-stones to prevent waggon wheels damaging gateposts and in farmyard and garden pavements. Six, at least, are to be seen in my own garden.

The stones are cut to the same general plan, but fall into three main groups, an example of each being illustrated here (PLATE IV).

(1) Meerstone with roughly dressed face rounded at the top and tapering from the base, but with rounded, irregular back and sides. Its vertical height is 23 inches and its mass makes it too heavy to be lifted by one man. The stone is deeply ' weathered '. The initials are those of Lord Sydney, who held many strips.

(2) Meerstone of rectangular section tapering towards the top, its vertical height being 29¼ inches. Its surface in ' weathered '. The more careful dressing on all four sides and the slimness of the upper portion, make this stone very much lighter than the first. This is the commonest type.

(3) Meerstone of rectangular section with parallel sides. Its vertical height is 31 inches. The stone is carefully dressed and the initials ' R F ' are deeply cut. There are few traces of weathering. This stone, also, is much lighter than the first. A few only of these are to be seen.

The first two stones are cut from a local oolitic ragstone, but the third is of sandstone. It is fairly clear that the latter stone was used to replace, at a comparatively recent date, one of an older type.

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[1] ANTIQUITY XXII, 79 ff.

* We take this opportunity of printing a short addendum sent us by Colonel Drew to the effect that balks were mentioned by Canon Jackson five years before they were ' invented ' by Seebohm : see his article on the Vale of Warminster in the *Wiltshire Archaeological Magazine*, vol. XVII, 1878, 194. ED.

[2] *Proc. Cotteswold Nat. Field Club*, XIII, 215 ff.

I am not aware that meerstones have been recorded from other parishes. It seems probable that their use must have been a fairly late development. A stone was erected by being buried for at least half of its length. When this is considered in conjunction with the weight of many of them, it suggests that they were permanent fixtures, designed to indicate the ownership of an adjoining strip. Other evidence published by Scobell (3) also implies permanent ownership of individual strips. It is, in fact, difficult to imagine these stones being moved, year by year, from strip to strip, in accordance with the medieval scheme of annual interchange, which must by now have been quite obsolete.

The parish tithe map, dating from the end of the eighteenth, or the beginning of the nineteenth, century is still in existence. On this, all the open fields are shown and the strips are carefully marked and numbered. CHARLES GREEN.

THE NEW ORDNANCE SURVEY 2½-INCH MAP

We print the following account of the new 2½-inch to mile (1 : 25,000) Ordnance Map which has been sent us by the Director General. A map on this scale, intermediate between the 6-inch and 1-inch, has long been wanted and will be heartily welcomed by field-archaeologists. It may be added that those sheets we have seen presented a most attractive appearance :—

Amongst the recommendations of the Departmental Committee set up in 1935 under the chairmanship of the Rt. Hon. the Viscount Davidson to review the styles, and scales, and the bringing up to date, of Ordnance Survey maps, was the initiation of an entirely new map series at the scale of 1 : 25,000 or about 2½-inches to one mile. Some five hundred sheets of this map, about one fifth of the projected total, are now published and it is hoped that the series will be complete in about three years hence. In the areas already covered there are signs of the increasing popularity of this map.

The decision to introduce the map was based upon a considerable weight of evidence that there was too wide a gap between the one-inch and six-inch series. It was believed that, in particular, schools and walkers would appreciate its value, but, in addition, the scale is of course very well suited to many technical and administrative uses. This was manifest during the war. The War Office series at this scale, based on the now obsolescent War Office Cassini grid, and somewhat illegible by reason of its straight photographic reduction from the six-inch Ordnance Survey map, was widely used by local authorities.

The new Provisional Edition of the 2½-inch map which the Ordnance Survey is producing on National Grid sheet lines is a very different affair. 'Provisional' means that it is based on the old 6-inch maps to which certain revision material, collected for A.R.P. war-time purposes, has been added ; on the other hand the final edition will be based on the 50-inch re-survey of built-up areas, now in hand in many towns, on the stringent overhaul of the 25-inch plans in rural areas and on surveyed contours. The 2½-inch Provisional sheets are all newly drawn, with conventional signs, symbols, etc., specially designed to suit the scales ; the result is an extremely clear and pleasing map.

The sheets are squares whose sides lie along the 10-kilometre grid lines of the National Grid, and each sheet is known by the 10 Km. grid reference of its S.W. corner. The sheet lines are, in fact, represented by the solid grid lines at 10 Km. intervals to be found on the face of all modern one-inch Ordnance Survey maps, and by the only grid lines to be shown on the ½-inch, and on the 10-mile (1 : 625,000) maps sponsored by the Ministry of Town and Country Planning. These smaller scale maps are therefore in

[3] Ibid.

themselves index diagrams for the new map ; the old system used for indexing 6-inch maps county by county does not apply to it.

The 2½-inch map is obtainable in three styles, the fully coloured, the outline and the administrative areas. In the first the black detail is confined to the outlines of roads and buildings, railways, lettering and certain conventional signs. Public buildings are also shown in solid black but all other buildings have a grey filling. Enclosure boundaries, orchard and wood symbols are also shown in grey which has the effect of merging the less important map features into the background and thus enabling the more important ones to stand out. (Note however that the grey features do not occur in certain Lancashire, Cheshire, Cumberland, Westmorland and East Anglian sheets). Water and marsh are in blue, and road fillings, contours (at 25 ft. intervals) and sand are in brown.

The Outline Edition is in grey monochrome, an exact replica of the coloured edition except that the features depicted in brown have been omitted. It is printed on specially heavy paper suitable for use in drawing offices. The Administrative Areas Edition consists of the outline edition with a red overprint naming and defining all classes of administrative boundaries down to parishes and wards. It is understood that the Local Government Boundary Commission intend to illustrate their report using the Administrative Areas Edition of the 2½-inch map. The sales of the Administrative Areas Edition covering rural areas have hitherto been small and it may be necessary shortly to consider whether the production of these sheets is justifiable or not.

It is indeed likely that as the series covers more and more of the country, it will be found to oust the 6-inch map wherever minor features of topographical detail are required in a compact form. At the moment the following areas are in course of being covered :—Greater London ; Edinburgh, Glasgow, Dundee and Aberdeen ; Plymouth and Dartmoor ; Purbeck, the New Forest, Southampton and Portsmouth ; the South Coast from Littlehampton to Ramsgate ; South Wales and Bristol ; Gloucester, Oxford, Reading and Luton ; East Anglia and the Broads ; Birmingham and the Black Country ; Tyneside ; and, perhaps most completely as yet, Lancashire, Yorkshire and Cheshire. The Director General of the Ordnance Survey at Chessington, Surrey, is open to enquiry at all times about what sheets are available in the various styles and which sheets are imminent. The maps themselves are, of course, obtainable, like all maps issued by the Department, from booksellers and map agents.

CHISEL, WEDGE, AXE AND ADZE

The implements specified above are all woodworking tools. Chisel and adze are applied to timber so that the edge cuts the timber on a wide front across the fibres of the wood. Wedge and axe are used so that the edge splits the timber on a tiny front between the fibres of the wood. Without them it would not be possible to achieve any great advance in the working of wood. Bow, arrow, and spear, all made from sapling, might be produced with no tools beyond flake knife, flake saw, and scraper, and these had all been available from an early stage in human culture. But any advance in the direction of sledge, canoe, or house-timber called for one or all of chisel, wedge, axe, or adze. They must therefore have played a highly important, indeed essential, part in the transition from food collecting to food producing, and were thus basic in the development of civilization itself. That so little research on their origin and primary relationship has been published is probably due to the initial stages of evolution being in bone, and for this reason rarely preserved over the ten or more millennia since they were first made.

H. H. Coghlan has recently published the most important contribution that has yet appeared on the subject (1). Though the present note criticizes some points, Coghlan's contribution marks a great advance in research in this field. He begins with a fairly lengthy discussion of the so-called hand-axe of the Lower Palaeolithic which has no connexion with the group we are examining. His discussion is a striking illustration of the importance of terminology, for Coghlan has been primarily influenced to carry out this part of his research by the implement being designated ' axe ', and this constitutes a gross error in terminology. If the term ' axe ' is to be used in Archaeology at all it must be used to designate an implement whose primary use is to split or dress timber. The fact that in its later history it was occasionally used as a weapon does not affect its primary function. Whatever the functions of the Acheulian implement, it was not used for dressing timber. The adoption of an internationally accepted name for this core implement is long overdue. Another advantage to discussion would be the banning of the term ' celt ' which fails to distinguish between axe and adze. A weakness in discussions of Old World Neolithic wood-working tools is the assumption, apparently unchallenged, that the axe was more important than the adze. This was certainly not the case in Polynesia, and calls for demonstration in Western Europe. The paper loses some of its value through paucity of illustration, a feature especially apparent to students in the Antipodes where collections of Upper Palaeolithic and Mesolithic material are insignificant or non-existent. Thus we are told (2) ' It is quite clear that wood-working tools, such as chisels, were known and used in the Upper Palaeolithic '. But none are figured.

An essential feature of chisel, wedge, axe, and adze is smoothness of the two surfaces the intersection of which forms the cutting edge. Failure on the maker's part to secure this smoothness ruins the implement. How is smoothness to be secured ? A difficult method was used by the makers of *tranchet* adzes in which the cutting edge results from the intersection of two surfaces each of which has been secured by the removal of a single flake. But the user of a *tranchet* is faced by a difficulty in sharpening his tool after it has been blunted by work. The writer has not had at his disposal the long series of *tranchet* necessary before the final answer can be given, but he supposes that resharpening can be done only by grinding a new edge (3). It is clear that the grinding process was essential in the finishing of chisel, wedge, axe, and adze. The most ancient examples of the process of grinding in shaping material occur in bone and are datable not later than the Middle Palaeolithic (4). It is presumed that bone chisels are present in the European Middle Palaeolithic. The step from bone chisels to bone wedges for splitting wood is a short one. Fundamental to the use of a wedge is a maul for driving it. Such a maul or mallet may be made of bone but is better made of wood (5). A bone wedge being struck by a bone maul inevitably suggests a bone handled wedge. Childe says (6) : ' We may then accept the " Lyngby axe " with its Solutrean and Magdalenian precursors as a handled

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[1] The Evolution of the Axe. *J.A.I.*, vol. 73, 1943 (1947), pp. 27–56.

[2] Ibid, p. 20.

[3] It is conceivable that re-sharpening may have been carried out by delicately chipping the bevel surface of the adze. Whether such a method was ever used in the Old World (it was not in Polynesia) can be shown only by examination of specimens.

[4] The shaping of wood by this process may have been practised even earlier.

[5] Stone wedges are never used because stone does not stand the blows of a maul. A stone may be used to keep open the split, but this does not constitute it a wedge.

[6] ' The Antiquity and Function of Antler Axes and Adzes ', ANTIQUITY, vol. XVI, p. 258.

wedge '. This would appear to be the way in which the idea of a swinging blow was first introduced to wood-working tools. It is suggested that this idea of a swinging blow was first applied to the wedge and next to the chisel, and that thus, from a chisel hafted so as to deliver a swinging blow, the ancestral adze emerged. It this were the actual origin of the adze it is not to be regarded as descending direct from wedge or axe but is the hybrid offspring of chisel and axe, coming into existence only a little later than the axe.

The wedge is an implement for splitting timber, and this is the essential function also of the ' swinging wedge ' or axe. But in dressing timber for habitations or for sailing craft the ' swinging chisel ', or adze, has a much more important function to perform than mere splitting. So in Polynesia the adze is overwhelmingly more important than the axe, and outnumbers it by a hundred to one. Dr Diamond Jenness tells me this was also the case in Canada. It seems probable that it will prove to have been the case in other parts of the world. The use of the axe in felling trees appears to be a comparatively recent innovation following the use of iron as material for axes. The stone axe was never so used by the New Zealand Maori nor by any other branch of the Polynesians. The use of the axe for dressing timber, as in the case of the ' bridge-builder's axe ' came later still. H. D. SKINNER.

PALAEOLITHIC MAN IN GREECE

While many caves in the Apennine Peninsula have yielded relics of pleistocene man below neolithic occupations, in the Balkan peninsula no palaeolithic remains had been recorded south of Bulgaria till 1942. British, French and German archaeologists have indeed explored several caves both in Greece and Crete and had recovered rich remains of occupation reaching back to the neolithic stage. But excavation stopped when a hard floor of travertine or breccia, impenetrable with the customary digging tools, was reached. During the war some Germans cut into the rock-hard deposit underlying the cave earth at Seidi near L. Copais in Boeotia and recovered the tools of Upper Palaeolithic hunters. Stampfuss published a note with line drawings of the flint, in *Mannus* XXXIV, 1942, classifying the artifacts as Magdalenian (I know no copy of this volume in the British Isles but one exists in Universitetets Oldsaksamling, Oslo). Very likely in other Greek caves too the base of the loose cave earth is not the rock floor of the cave, and human occupation had begun long before the superficial deposits began to accumulate. It would clearly be extremely desirable to know how upper palaeolithic culture developed in a region lying so close to, if not actually within, the presumptive cradle of agriculture and stock raising; and to ascertain, for instance, whether there were perhaps in the Balkans wild sheep and goats suitable for domestication already in late pleistocene times. V.G.C.

USE AND MANUFACTURE OF TOOLS BY THE LOWER PRIMATES

In his review of Dr Clark's book on p. 217 of this number, Professor Leslie White of Michigan University refers to the use of tools by apes. We asked him to amplify the passage, which concerns a fundamental problem, and he has kindly done so in the following words:

In *The Descent of Man*, Darwin reports that he had himself seen an orang use a stick as a lever, and he cites other testimony to the same effect. The ability of monkeys and apes to use tools has now been established as a fact by numerous experiments and observations (see W. Köhler, *The Mentality of Apes*, New York, 1925; R. M. and A. W.

Yerkes, *The Great Apes*, New Haven, Conn., 1929; W. N. and L. A. Kellogg, *The Ape and the Child*, New York, 1933, etc.).

The ability of apes to *make* tools has, however, been denied and disputed. In Darwin's day the Duke of Argyll insisted that 'in no case whatever do . . . [lower animals] use an implement made by themselves' (*Primeval Man*, p. 147, New York, 1872). Edward Clodd also declared that if man 'is not the only tool-user, he is the only tool-maker among the Primates' (*The Story of Creation*, p. 217, London, 1888). And today, Grahame Clark, in *From Savagery to Civilization*, reviewed elsewhere in this issue, asserts that 'the understanding use of tools and their purposive devising is a characteristic of man alone' (p. 7). Father Wilhelm Schmidt is still unwilling to admit that apes even use 'real tools', let alone make them ('Primitive Man,' p. 41, in *European Civilization*, vol. 1, Edw. Eyre, ed., London, 1934).

W. Köhler reports that a chimpanzee, observed by him, combined two sticks by inserting the end of one into the hollow end of the other, thus making a tool long enough to obtain food hitherto out of reach (op. cit., p. 132). When the hollow end was stopped up, the ape readily withdrew the stopper and inserted the other stick. He even combined three sticks in this way. Once when the one stick was too large to be inserted into the hollow end of the other, he chewed it on one end (only) so as to make it small enough for insertion. Chimpanzees readily build structures of boxes and crates in order to obtain food originally suspended out of reach, demonstrating their ability to manipulate things in their environment and to relate them to one another and to an objective in a meaningful manner. *The Mentality of Apes* contains two chapters entitled 'The Making of Implements.'

R. M. Yerkes, a psychologist and life-long student of apes, writes: 'It is well established that the chimpanzee occasionally at least makes instruments for the satisfaction of its needs' (op. cit., p. 363). E. A. Hooton, a physical anthropologist, accepts Köhler's data as indicating 'that chimpanzees on the ground tend to develop tool-using and tool-making habits to a limited extent' (*Up From the Ape*, p. 138 2nd ed., New York, 1946). The comparative psychologist, Th. C. Schneirla, writes: 'That the combined sticks [in the Köhler experiment] were perceived and used as a true tool and not simply by accident, was indicated by the fact that when the sticks became separated, the animal straightway reconnected them in a manner that suggested an understanding of their function together' ('Psychology, Comparative', *Encyclopedia Britannica*, 1948). Anthropologist A. L. Kroeber accepts the evidence of observations and experiments with chimpanzees as an 'indubitable' indication of tool-making (*Anthropology*, pp. 58–59, 2nd ed., New York, 1948).

If apes can make and use tools, why have they not developed a traditional material culture as man has done? The present writer has suggested an answer to this question in 'On the Use of Tools by Primates' (*Journ. of Comparative Psychology*, vol. 34, pp. 369–74, 1942), which, briefly stated, is: 'The ability to use symbols, peculiar to man and of which articulate speech is a characteristic expression, has transformed the discontinuous, non-cumulative, non-progressive tool-process among lower primates into a psychological continuum subjectively, and into a cumulative, progressive tradition objectively, in the human species.'

LESLIE A. WHITE.

Reviews

MERLIN'S ISLAND. *By* T. C. LETHBRIDGE. *Methuen*, 1948. 188 *pages*, 2 *maps*, 8 *plates*. *Price* 10*s* 6*d*.

Mr Lethbridge has done what many a man would like to do. Unrestricted by a title or by a theme he has written a book of his own choosing, picking on isolated topics here and there, omitting much, skating easily over more, and elaborating only what has caught his fancy. This is a personal book and it tells us much about the author—he does not believe we shall ever become Russians, he hates well-meaning legislation and Civil Servants, he was shooting rats at the age of seven, and he always carries a bean-talisman in his pocket. Anecdote and reminiscence add spice to his pages. He talks rather than writes, and though Mrs Lethbridge deserves high praise for her treatment of the script—her husband ' did not put in any punctuation whatsoever '—inaccuracies of grammar and infelicities of expression remain gloriously abundant. This heightens the impression that one is not reading a book but listening (after dinner) to a field-archaeologist casually, sometimes rashly, disburdening himself of theories, views, and guesses. There is nothing wrong in this. Too many people die leaving behind them a few careful articles incorporating conclusions drawn from well-digested evidence, and taking with them the conjectures and impressions that we should find interesting and, occasionally, instructive. Even the guesses of a man who has devoted his life to a subject will probably indicate possible lines for future exploration.

But guesses are not investigations, and these lines remain to be scientifically explored. Mr Lethbridge speaks of some of his theories as ' damnable heresies ', and he is aware that they may not be accepted by other scholars. We are given the benefit of his impressions, but he seldom lingers with them long enough to work them out in adequate detail or with adequate evidence. His views on Anglo-Celtic racial fusion, for example, are interesting, but they are not likely to be taken seriously, for he does not stay to discuss the varied and growing body of evidence—in particular he ignores the important conclusions that may be drawn from language studies and place-names. He sees evidence of Romano-British culture too easily in modern survivals, and perhaps he does not allow enough for the re-introduction of continental influences during the intervening centuries. In general he minimizes the effects and importance of the Anglo-Saxon settlement, and his comments on racial types and racial characteristics, though possibly suggestive and certainly entertaining, do not lead to any scholarly conclusion. His views on these questions could no doubt be expanded and supported, but he does not provide us with the evidence. We cannot accept, even tentatively, the suggestion that *Gewissae* may mean ' Confederates to the Romano-Britons ', and too little is known of racial origins and distributions in Scotland to permit the startling attribution of clan rivalries to the existence of Norse settlers. As casual suggestions thrown out in a late and lively conversation these points might stimulate discussion, but some of them seem rather inappropriate in cold print. And one fears that the philologists will receive with smiling scorn Mr Lethbridge's contributions to their subject.

Mr Lethbridge is especially fascinating on early boats, houses, gable-ends, and farm wagons.* He shows that there is much to be done in the collection and arrangement

* We take this opportunity of publishing, on PLATE V, a photograph of a boat-roofed house in the Outer Hebrides. ED.

BOAT-ROOFED FOWL-HOUSE, CARLOWAY ROAD, CALLANISH, ISLE OF LEWIS
Ph. O. G. S. Crawford, 1936

facing p. 212

of types, and, as he forcefully points out, another generation will lack the opportunities that still lie with us. I cannot comment on the suggested evolution and association of types, but I should like a little more evidence before I believe that the Suffolk beach yawl and the Sussex lugger are derived from Roman models, the latter through designs submitted by St. Wilfrid. One can agree unreservedly, however, with Mr Lethbridge's amusing strictures on the value of local testimony ; if all reputed underground passages really existed then Britain would possess a network of tunnels that would shame the London Passenger Transport Board.

Perhaps the most interesting section is that in which the author deals with ' Archaeology and the Souvenirs of War '. He argues that objects recovered from known battle-sites should be used more frequently for dating purposes. This sounds so simple that one may wonder why archaeologists have so long neglected such a promising field. The answer lies in the fact that it is remarkably difficult to locate known battles on the ground and equally difficult (for the Dark Ages) to associate archaeological finds with known battles. It is an excellent suggestion, but it has severe limitations in practice as any archaeologist or historian who has tried it out will testify. Mr Lethbridge himself has met these difficulties : he could not find his ' drowned Normans ' though he knew of the skirmish, and he cannot name other battles though he knows of the sites. It is an exceedingly difficult business, and it is not made easier by the fact that the archaeologist, the historian, and the philologist not infrequently disagree upon what constitutes a safe identification of a known archaeological site with a known historical event or a safe association of a certain burial mound with a certain historical figure. The archaeologist may claim (pp. 22–24) to have found the place where King Anna was buried, but the historian will probably turn away his eyes and the philologist will probably hold his nose.

But Mr Lethbridge has not written a cautious book for cautious scholars. He deliberately seeks a wider audience and, shearing away technicalities, he lays before it a volume of experiences, theories, suggestions, hints, and reminiscences. Despite awkwardness of style and incoherence of arrangement, he has been conspicuously successful, for this is a book that the general reader will find attractive and stimulating. Mr Lethbridge has seen things for himself : he has examined the objects that he describes, he has sailed in primitive boats, and he has excavated burial mounds, dwelling-sites and earthworks both in this country and in the far north. From experience he has gained much knowledge of the kind that escapes less practical inquirers ; he can condemn, for example, ' trade routes gaily plotted by students across stretches of ocean where tide rips would make such routes most unsuitable to men using primitive vessels '. He contrives successfully to pass on his knowledge to the reader, and from him we learn much, especially about the habits, appearance and culture of the peoples who lived in Britain during the Dark Ages. It is the word, sometimes hasty, of the man on the spot, the man who has held the material objects of culture in his hands, and as such it is worthy of the attention of all who are interested in this dark but fascinating period.

F. T. WAINWRIGHT.

THE FIRST EUROPE. *By* C. DELISLE BURNS. *Allen and Unwin*, 1947. 684 *pages. Price* 25*s.*

The ' first Europe ' is Medieval Christendom. It rose on and partly from the ruins of the Roman Empire ; it was the European way of life until the Renaissance, and then it survived to control the formation of the ' second Europe ' which is now disintegrating before our eyes. That is Dr Burns's theme. Therefore his book, which covers the period A.D. 400–800, is more than a study of the foundations of European civilization.

It is also a study of an age in transition, and it throws light on the difficulties and problems that face our own generation.

Dr Burns emphasizes that the four centuries which followed the collapse of the Roman Empire in the west were not simply ' Dark Ages ' of barbarism and chaos. He gives a vivid picture of the fundamental changes that were taking place beneath the surface of treachery, intrigue and violence. He explains how these changes mark a break with many Roman traditions and how they formed the basis of a new and largely non-Roman civilization. He discusses the new forces operating to produce a new social structure, new attitudes of thought and those great institutions which dominated the Middle Ages and which, in many cases, have survived into modern times. This is a brilliant attempt to understand the origins of the mental attitudes and social relationships which together constitute Medieval Christendom. It is obviously the work of a scholar of wide reading and deep philosophical insight, and the student of modern history, no less than the student of medieval history, will find it stimulating.

The author is a bold and vigorous writer. He brings to each section a mass of marshalled evidence enlivened with illustrations and parallels drawn from the modern world, and even his most difficult passages are models of lucid exposition. He does not shrink from broad and sweeping historical conclusions, or even from the pronouncement of moral judgments. The broad conclusions sometimes suffer from oversimplification. The introduction of modern parallels, and the application of principles and theories current in the middle of the 20th century sometimes obscure rather than clarify the motives and issues of an earlier age. These are hidden strains and stresses in a picture which is perhaps too complete and which leaves too little unexplained, but they do not imperil the structure of a work which draws its strength from the author's bold approach rather than from his minute examination of the sources. And, as a method of maintaining the interest of the general reader, the constant linking of past with present is a highly successful manœuvre. Dr Burns was aware of the dangers inherent in this method, but by a deliberate and judicious use of it he has proved that it is still possible to write a detailed survey of a remote period in a way that will be vitally interesting to a wide audience.

We should remember that Dr Burns deliberately attempted to throw light upon the problems of our own day and that he deliberately sought a wide audience—' the book is intended, not for specialist scholars of the period, but for the ordinary reader who is interested in the problems of social transition '. Judged by this aim the book is an outstandingly successful achievement. Scholars should write more books like this, and politicians as well as the ordinary reader should study them. Despite the author's modesty, however, this is also a book for scholars. Inevitably there will be rejections and modifications, especially at points where complicated issues are oversimplified; but scholars will not ignore the views here so forcibly put forward. It is always difficult, and often impossible, to uncover the roots of an age. That is what Dr Burns has tried to do, and the result is a solid contribution to our understanding of four obscure but formative centuries. F. T. WAINWRIGHT.

EGYPTIAN PYRAMIDS. *By* L. V. GRINSELL. *John Bellows Ltd., Gloucester*, 1947. *pp.* 194, 14 *halftone plates*, 27 *figs. of line drawings*, 8 *sketch maps*, 10×7½ *inches. Price*, 25*s nett.*

A most interesting book, and attractively got up! Mr Grinsell's studies of the British tumuli are well-known, and, as was fitting, when stationed in Egypt during the recent war he turned his attention to the pyramids. The present book is the outcome of

his researches, and is the more to be admired as being the product of merely the author's spare time.

A book on such a subject is liable to become just a text-book recording measurements and repeating details for each pyramid which are very much like those in many others. This kind of thing would soon become wearisome, and certainly could not be read through. This pitfall, however, the author has avoided, and has compiled a very readable account, not only of the pyramids themselves but of all sorts of things connected with them; of the religious ideas in which they originated, of the methods by which they were built, of the general plan of a pyramid complex, of the administration of such a complex, of the ceremonies carried out in the temple, and of the endowments. He also gives examples of the long time that the worship of some of the kings was maintained. To accomplish this the vast and scattered archæological literature has been ransacked and its information assimilated and given to the public. This is Part I. In Part II the pyramid fields are taken in order from north to south, and a sufficient account is given of each pyramid beginning with its ancient name when that is known.

At the end of each chapter there is a bibliography of the chief works on the subjects discussed, so that those who wish to enquire further are enabled to do so. At the end of the book there are two important appendices. The first is a list of objects from the pyramids now scattered over the world, all arranged under the names of the museums in which they repose. The second is a chronological list of the pyramids, accompanied by the sites at which they are built, the names of the builders, and the dynasties, to which latter the dates are added. The whole is preceded by an Introduction giving an account of the interest which travellers have taken in the pyramids from the time of the Sixth Dynasty onwards through Pharaonic times, to the classical writers, the Arab writers, the medieval travellers, and so on to the scientific awakening beginning with Napoleon's expedition. Plate II is a reproduction of a curious picture of the Gizeh Pyramids and Sphinx published in 1670.

The book is enlivened by a number of plates both photographic and line. The line drawings are beautifully done and all the photographs are good, several being very pleasing and some of them new. Plate VI shewing a specimen of the Pyramid Texts, and Plate XII shewing the interior of a late pyramid are valuable contributions. The grouping together of the development series in Figs. 3 and 4 is specially helpful.

It is a great service to archæology to have got so much information on so vast a subject between two covers. As for the general public, it will no longer have an excuse for talking vaguely about 'the pyramid in Egypt' and so forth. On the contrary it will find that there are about 37 major pyramids lying between Cairo and the entrance to the Fayyum.

Pyramids are sun symbols and at first sight their shape seems a curious one in which to embody such an idea. But the author refers to Pliny's statement which provides the explanation. The essential part of an obelisk is the little pyramid on the top, and this Pliny describes as 'petrified rays of the sun'. Evidently, therefore, a pyramid represents the rays of the sun shooting down and spreading out over the earth.

Other interesting information is to be found. Thus, we are given a specimen of one of the calculations which the scribe would have had to make during the construction of a pyramid. Like the buildings themselves, this effort in arithmetic shews that while the ancient methods were not ours yet they produced the results. Again, we have selections of the Pyramid Texts in translation, and a photograph of a section in the original hieroglyphs to shew what they look like. These texts dating from about 2500 B.C. are the oldest collection of religious writings in the world, and they reflect

beliefs which it is not always easy for us to follow. It is noted that in one case a comparison of two inscriptions shews that a period of 272 days elapsed between the taking of the body to the place of embalmment and thence to the tomb. Therefore, in this case the embalming evidently took that length of time. It is pointed out that the foregoing religious benefits were originally designed for the king, from whom they were gradually extended first to the queen and then to the nobles. Of course it is already well-known how in the course of ages the benefit of the best burial that one's means would afford gradually spread downwards to the populace.

The available evidence is marshalled to shew the methods by which the pyramids were constructed, how they were laid out, whence the stones were quarried, how they were worked, transported, and set in position. It has been found that the roofing blocks were actually cut to shape, arranged and numbered before being put in place. The pace of the work was probably such that in the Great Pyramid as many as 300 stones a day may have been laid. A great feat of organization! Yet its difficulty did not deter Sneferu from building at least two big pyramids, that at Meydum and the Blunted Pyramid at Dahshur. Here we may call attention to the addendum to p. 164 which corrects the erroneous statement in the *Illustrated London News* that the name of Sneferu's wife, Hetepheres, has been found at the latter site.

Until the Middle Kingdom the pyramids were all built by raising the inner structure and adding accretions outside. This resulted in a step pyramid of which each step was finally filled in when the whole was covered over with a smooth pyramidal surface. Thus, the Step Pyramid at Saqqarah, which never became a true pyramid, is a link between the pyramid and the old mastabah from which the pyramid was evolved. Curiously enough each of the successive accretions was dressed to a smooth surface, although they were all going to be covered over by later accretions and finally by the pyramidal face. At Meydum, however, things were more complicated than that, for today a band of undressed stones is visible between the lower and upper parts of the sixth accretion face. Like everyone else Mr Grinsell offers no explanation of this. Yet it must mean that the next accretion face was carried over the tops of the inner ones, though it is difficult to see how the sixth face maintained its straight line under such conditions. The reviewer himself discussed the question in *The Labyrinth, Gerzeh and Mazghuneh*, p. 25, though without coming to any conclusion.

Although the Old Kingdom pyramids were seriously plundered already in the chaos of the First Intermediate Period and even before then, the time of Ramesses II was specially unfortunate for the monuments. At Saqqarah nearly all the casing of Khendjer II's pyramid was removed in that reign, as was the casing from the pyramid of Sesostris II at Lahun. Hence, no doubt it would have been in the same reign that the Meydum pyramid was reduced practically to its present state. The evidence for this is that burials of the Twenty Second Dynasty were made just under what is still the surface of the refuse accumulated round the base of the monument. We thus at least know that this refuse from the destruction had assumed its present size and form within three hundred years of Ramesses II's reign. However, a certain amount of destruction seems to have taken place since the Middle Ages, at which time the pyramid is described as having five steps whereas it now has only three.

A first edition of a big work generally will bear re-working in some places. For instance, things are so involved at the Step Pyramid that this section would perhaps be the better for re-casting whenever a second edition appears. In a work covering so large a field and so much detail as the present one it is almost impossible but that some misprints and slips should occur. However, those that the reviewer has noticed are so few

that it almost seems ungracious to record them. The final *-ra* has dropped off the name Aakheperkara, which is spelt correctly in the previous line (p. 15). Similarly 11 has become 1 in the name Sesostris (p. 47). On p. 39 the passage is not a ramp but a tunnel as it is correctly described on p. 69. On pp. 47, 187 Deir abu'l Naga should be Draa abu'l Naga. On pp. 15, 48 the term ' Meroitic ' is used whereas it should be ' Ethiopian ', ' Meroitic ' being confined nowadays to the later period of Ethiopian history. These are all very small corrections which along with a few other improvements can be made in the second edition which no doubt will soon be called for. G. A. WAINWRIGHT.

FROM SAVAGERY TO CIVILIZATION. *By* GRAHAME CLARK. *London, Cobbett Press*, 1946, *pp.* IX+112, 24 *Figs.*, IV *Pls.* *7s 6d.*

HISTORY. *By* V. GORDON CHILDE. *London, Cobbett Press*, 1947, *pp.* 86, 10 *illustrations.* *7s 6d.*

These excellent little volumes are part of a ' Past and Present ' series dealing with various aspects of civilization, its development and its history. Other items in the series have already been published and more are yet to come.

From Savagery to Civilization is a very fine sketch of the growth of human culture from anthropoid levels to the Iron Age. The style is simple and lucid ; the author keeps the story moving with unflagging interest from beginning to end. Excellent pictures and maps, well thought out diagrams, and a bibliography add much to the book's interest and value.

The author begins with a chapter on the evolution of man and then goes on to his survey of the origin and development of culture from the lower levels of savagery through the higher stages to barbarism and the origins of civilization. It is both noteworthy and gratifying to find the cultural evolutionist point of view, long ago established in ethnology by Tylor, Morgan, *et al.*, so ably and unequivocally set forth in a work of the present day. The Boas school in America and the Schmidt-Koppers group in Europe—not to mention more than a little sniping from the Functionalist schools—have preached the reactionary doctrine of anti-cultural evolutionism for so long that many scholars, outside as well as within the group of anthropologists, have come to believe—and to assert—that ' evolutionism is dead '. In Clark's treatment of culture we find, in addition to *evolution* itself, such concepts as *stages*, progress, measured in the objective terms of increase of technological control over habitat, the equivalence of present-day primitive cultures with those of prehistoric times, the evaluation of cultures, etc., all of which have been expressly opposed and rejected by the Boas school.

In view of the over-all excellence of this work it might seem petty to pick out minor points for question or criticism, but perhaps it is here that the reviewer can be of most use to the general reader. The reviewer thinks that the author underestimates the tool-using abilities of apes (p. 7). The studies of W. Köhler, R. M. Yerkes, *et al.*, indicate not only that apes use tools of their own initiative and with no little skill and versatility, but can—and do occasionally—make or fashion them (see p. 210 above). The author emphasizes the ' almost limitlessly superior potentialities ' of *homo sapiens* over his predecessors ; he finds an ' impressive gap in quality of mind between them ', (pp. 18, 31). This assumption is based in part upon ' their respective achievements in the realm of culture ', and in part upon morphology. To infer mental ability from degree of cultural development seems unwarranted to the reviewer ; to deduce it from fossil remains, a dubious procedure at least. Would it not be sounder to explain the growth of culture culturologically rather than biologically at all points ? The author rules that the female

figurines, or ' Venuses ', of the Palaeolithic are ' not cult objects, but characteristic products of unregenerate male imagination ' (p. 56), but upon what evidence or for what reason he does not say. Finally, a brief sketch of the development of cultures of the New World, placed alongside that of the Old, would, in the reviewer's opinion, have added valuable data to the book and significant testimony upon the theory of cultural evolution.

History, by Childe, is the story of man's attempts, from remote times to the present, to render an orderly account of the sequence of human events. The author first presents ' an example of an historical order ' (Ch. II), which is, essentially, an outline of cultural development sketched from a technological point of view. He next notes ' the formation of a tradition of historiography ' among advanced preliterate and early literate peoples (Ch. III), and then passes in review a series of theories of historical order : supernaturalistic (theological and magical), and naturalistic (geographic, biological or racist, economic, and scientific, materialist). The errors, biases, shortcomings, and merits of the several types of interpretation are appraised. Childe finds the materialist conception of history as formulated by Marx and Engels and developed and used by Lenin and others, the most realistic and scientifically adequate approach to the interpretation of culture history. He makes it very plain, however, that this conception is ' not to be used slavishly ' or regarded as sacred dogma. He insists repeatedly that progress is not inevitable ; even the continued survival of the human species is not guaranteed. The relationship between social and ideological systems on the one hand and their underlying technological systems on the other is discussed in an illuminating and instructive manner. One is impressed to find so much packed into so small a volume.

Professor Childe contrasts the high degree of control over the natural environment achieved by modern man with his meagre ' control over the social environment ', and suggests that the latter is due to the ' absence of any science of society '. The implication is that, if and when such a science is developed, man will acquire control over his ' social environment '. The reviewer believes this analogy to be unsound. Man is able to control nature—domesticate animals, cultivate plants, dam rivers, harness water power, burn coal in engines, etc.—because he is able to act upon them as an agent *outside* their respective systems. But in the man-culture system man is a constant, a dependent variable ; culture, the independent variable. It is, therefore, culture that determines the behaviour of man, not man who controls culture. And culture changes and develops in accordance with laws of its own, not in obedience to man's desire or will. A science of culture would disclose the nature and direction of the culture process, but would not put into man's hands the power to control or direct its course. LESLIE A. WHITE.

THE VICTORIA HISTORY OF THE COUNTY OF WARWICK, VOLUME FOUR, HEMLINGFORD HUNDRED. *Edited by* L. F. SALZMAN, M.A., F.S.A. *Published for the University of London Institute of Historical Research by the Oxford University Press*, 1947. *Cloth*, 42*s.* ; *Half Leather*, 63*s.*

This fourth volume of the *Victoria County History of Warwickshire* constitutes the second of the topographical volumes designed to supplement the general acticles contained in the two introductory volumes. It comprises the history of the Hundred of Hemlingford, the north-eastern part of the county drained by the river Tame and its tributaries, which included Tamworth, Sutton Coldfield, Coleshill, Atherstone, Nuneaton and Birmingham. It is unfortunate that the history of Birmingham, which logically should have been included in this volume, has had unavoidably to be postponed for inclusion in a later volume.

Prefaced by an essay on the Hundred of Hemlingford (at the time of Domesday known as ' Coleshelle ' Hundred) the volume follows the plan of its predecessor in presenting a separate summary history of each parish within the Hundred. In each case particular attention is devoted to the history of the manor or manors and of the advowson, a description of the church and other buildings and a summary of charities and general topographical information. The historical accounts are the work of a team of authors, several of whom obviously labour under the disadvantage of not possessing adequate local topographical knowledge. Mr J. W. Bloe, F.S.A., has contributed the architectural descriptions and the late Rev. E. E. Dorling, M.A., F.S.A., the heraldic drawings and blazon.

The format and style of production of the volume are as impressive as those of its predecessor. There are abundant excellent illustrations, many of them the work of Mr W. A. Clark. The architectural plans and descriptions leave little to be desired, except perhaps in odd instances, and the heraldic work and blazon is good. Unfortunately, this high praise cannot be extended without reservation to important sections of the text, for this volume appears to lack the benefits of local editorship which made its predecessor so outstandingly good. This general criticism could be made specific by a number of examples, three of which may be cited here. Firstly, one of the most important archaeological discoveries in this part of Warwickshire in recent times, the discovery of an iron age camp at Corley, is not even mentioned. Secondly, the treatment accorded to the borough of Sutton Coldfield is totally inadequate, no attempt having been made to use the borough records. Thus, while the manorial history of the township is covered, the equally important story of borough government is not told. Thirdly, the account of the history of Nuneaton is likewise sketchy, and local readers will be disappointed that the George Eliot associations of the locality have not been more fully treated.

It is obviously impossible to detect and make use of all surviving local records in a work of this kind. But it does seem somewhat extraordinary that the resources of one of the county's record repositories most likely to yield information—Shakespeare's Birthplace Library—have not apparently been explored and used. Here, for example, will be found the Ferrers collection of records, known only to the author of the account of Baddesley Clinton from a secondary source. Here will be found manorial records relating to Maxstoke Priory, Meriden, Solihull, and other places which would have well repaid consultation. Here also are documents which supplement considerably what is said about the history of places like Nuthurst, Hampton and Bickenhill, to mention only a few instances.

In spite of these criticisms the volume is a welcome addition to the bibliography of Warwickshire history and its successor is eagerly awaited. LEVI FOX.

ARCHEOLOGIE MESOPOTAMIENNE. *By* ANDRÉ PARROT. *Les Étapes. Albin Michel, Paris,* 1947. 542 *pages. Price* 480 *francs.*

Dr Parrot's new book is the first of three volumes, two of which, *Technique et Problèmes* and *Précis Chronologique et Synoptique* are to appear subsequently. The complete work (combined perhaps with the new volume of Conteneau's *Manuel d'Archéologie Orientale*), should now supersede Christian's *Altertumskunde des Zweistromlandes* as the most up-to-date and comprehensive study of excavations in Mesopotamia and their results. The present volume sets out merely to record details of the various expeditions—the composition of their staff, the chronology and topography of their operations and summaries of their finds. It contains no critical commentary, but a great volume of useful information, and alone constitutes a reference book such as few archaeologists can afford to be without.

The early chapters, dealing with the first exploration of Mesopotamia by Europeans, and excavations carried on during the last century (' from Botta to Sarzec ') deservedly emphasize the fine tradition of French archaeology in this field, and, especially since the province under consideration is conveniently extended eastwards to Susa and north westwards into Syria, the section dealing with more recent times, shows this tradition worthily maintained in our own generation by a succession of Frenchmen, amongst whom it should most unreservedly be affirmed that Dr Parrot himself has played a leading rôle. The notes, for instance, on his own marvellously successful excavations at Mari, provided a most useful précis of the successive reports published in ' Syria ', and are an important supplement to his popular account, while it is gratifying to learn that the orthography of the famous archives is now complete, and that their translation will soon make them accessible to historians. It is also most satisfactory to find the extension of the province bringing into focus some less generally known enterprises such as the excavation of Tell Ahmar and Séfiré, to say nothing of the half-dozen sites in this area excavated by the North Syrian expedition of the Oriental Institute, with a minimum of subsequent publicity.

The long saga, of which this book provides a skeleton account, is a great and remarkable one, and as one turns its pages, one is reminded again of the poignant alternation between triumph and despair to which all excavators must submit themselves. Botta's measured phrases when he claimed—' Je crois être le premier qui ait découvert des sculptures que l'on puisse, avec quelque apparence, rapporter à l'époque ou Ninive était florissante ', could scarcely disguise his great elation, while by contrast, Place's reference to the tragedy at Kurnah—' Il ne reste plus qu'à vous prier, Monsieur le Ministre, de vouloir bien ne pas me rapprocher un désastre où je suis à tout prendre le plus malheureux ' is almost a *cri du cœur*. The discovery of the missing fragment of the Deluge Tablet, followed by George Smith's death in Aleppo, and Dr Parrot's own discovery of Mari, overshadowed by the motor-accident which robbed him of two collaborators, are other examples.

As has already been said, Dr Parrot has reserved all critical comments for a future volume, nevertheless he is occasionally unable to resist some animadversion in dealing with matters other than archaeological, such as may still tend to stimulate a last flicker of controversy over events long past. The professional ethics, for instance of Hormuzd Rassam are perhaps still fair game for the historical critic ; yet the suggestion that Layard, in 1851, abandoned archaeology rather than submit to working under Rawlinson is hardly a worthwile inference from the biographical material available. Two points in connexion with comparatively more recent events are also perhaps worth correcting. Tell Tainat was not discovered by the late Claude Prost, but by an employee of the Oriental Institute, while the statement on page 364 that Iraq in 1933 decided to assign no further objects to foreign excavators may be refuted by a glance at the provisions of the present Antiquities Law.

It should certainly be added that the book is admirably produced. Both the half-tones and the many line-blocks, some of which skilfully adapt illustrations in the original publications, are above the average in reproduction ; and in this connexion it may be interesting to note that the range of Khorsabad sculptures appearing in Figure 7, to illustrate the efficiency of Flandin's recording, are the only slabs which have eventually found a place in the Iraq Museum, where the heads of the figures, much affected by exposure, were restored from Flandin's drawings. Finally one may perhaps suggest that the promise of an index in the third volume is poor compensation for its absence in the present one.

SETON LLOYD.

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Edited by

O. G. S. Crawford, F.S.A., and Roland Austin, F.S.A.

NO. 85 MARCH 1948

Published at 24 Parkend Road, Gloucester, England

Price: Single Copies 5s 6d—Annual Subscription 20s

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Antiquity

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Edited by

O. G. S. Crawford, F.S.A., and Roland Austin, F.S.A.

NO. 87 SEPTEMBER 1948

Published at 24 Parkend Road, Gloucester, England

Price: Single Copies 5s 6d—Annual Subscription 20s

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Antiquity

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Edited by
O. G. S. Crawford, F.S.A.

NO. 88 DECEMBER 1948

Published at The Wharf, Newbury, Berks., England

Price: Single Copies 5s 6d—Annual Subscription 20s (or 5 dollars)

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EDITORIAL NOTICES

ANTIQUITY is published quarterly on the 1st of March, June, September and December.

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